

PVP

**PAINT and VARNISH
PRODUCTION**

Newport TALL OIL FATTY ACIDS ACONEW EXTRA • ACONEW 500



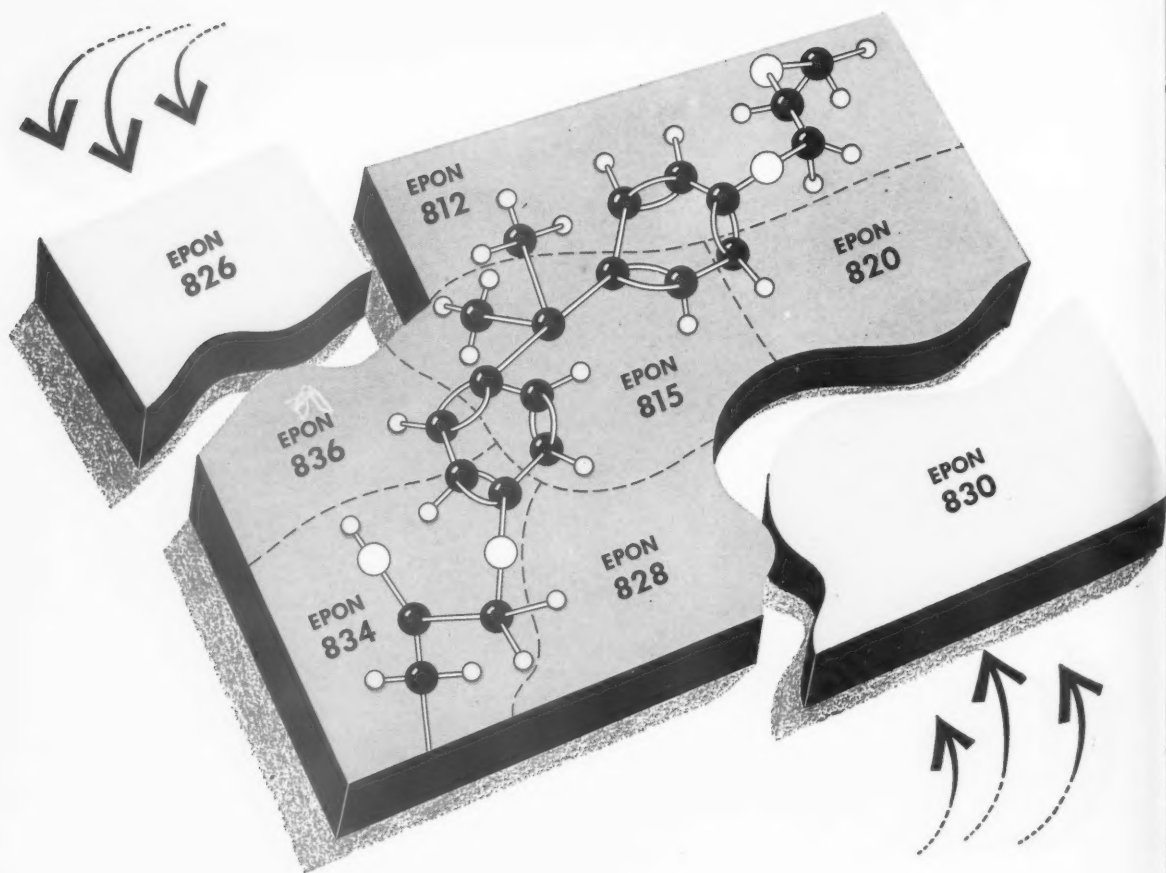
CHECK YOUR USES FOR THESE QUALITY TALL OILS
IN THIS BOX SCORE OF TALL OIL USES

- | | |
|---|---|
| <input type="checkbox"/> ADHESIVES | <input type="checkbox"/> PAINT DRIERS |
| <input type="checkbox"/> ASPHALT EMULSIONS | <input type="checkbox"/> PAINT OILS |
| <input type="checkbox"/> ASPHALT WETTING AGENTS | <input type="checkbox"/> PENETRATING OILS |
| <input type="checkbox"/> BINDERS | <input type="checkbox"/> PIGMENT WETTING AGENTS |
| <input type="checkbox"/> CUTTING OILS | <input type="checkbox"/> PLASTICIZERS |
| <input type="checkbox"/> EMULSIFIERS | <input type="checkbox"/> POLISHES |
| <input type="checkbox"/> FUNGICIDES | <input type="checkbox"/> PRINTING INKS |
| <input type="checkbox"/> GLOSS OILS | <input type="checkbox"/> RESINS |
| <input type="checkbox"/> GRINDING AIDS | <input type="checkbox"/> RUBBER CHEMICALS |
| <input type="checkbox"/> LINOLEUM | <input type="checkbox"/> SOLUBLE OILS |
| <input type="checkbox"/> MOLD LUBRICANTS | <input type="checkbox"/> SULFONATED OILS |
| <input type="checkbox"/> OIL CLOTH | <input type="checkbox"/> VARNISHES |

When you have checked your particular use, send us this Box Score, and we will recommend the Tall Oil Product best suited for your application.



A Division of Heyden Newport Chemical Corporation
342 Madison Avenue New York 17, New York



Completing the viscosity picture—

Two new liquid Epon® Resins

Two new additions to the liquid Epon resin line, 826 and 830, complete the "viscosity spectrum" to bring you maximum flexibility of application. Now there is an Epon resin to meet almost any formulation need.

New Epon resin 826—pale in color and clear... brings you lower viscosity and lower reactivity while maintaining high heat deflection temperatures. It is an excellent choice for laminating...

particularly for filament winding... and for such electronic and electrical applications as potting, sealing, and encapsulating.

New Epon resin 830 fills out the list of available resin properties. It has higher viscosity and higher reactivity than Epon resins 826 and 828... providing formulators with a viscosity-reactivity range to meet their particular requirements.

If you prefer, you can buy other Epon resins in ready-to-use solutions saving you the time and labor of dissolving and standardizing.

For complete information on Epon resins... or technical assistance concerning application problems... phone or write your nearest Shell Chemical district office.

SHELL CHEMICAL COMPANY PLASTICS AND RESINS DIVISION

110 WEST 51ST STREET, NEW YORK 20, NEW YORK

Eastern District
42-76 Main Street
Flushing 55, New York
Flushing 3-4200

East Central District
20575 Center Ridge Road
Cleveland 16, Ohio
EDison 3-1400

Central District
6054 West Touhy Avenue
Chicago 48, Illinois
SPring 4-6711

Western District
10642 Downey Avenue
Downey, California
SPruce 3-0601

IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited, Toronto





LATEX



15-month exposure of a 2647 topcoat over 2647 primer, on cedar siding. Film shows no deterioration, no rust streaks over steel nail-heads.

DOW ALL-LATEX SYSTEM FOR EXTERIOR WOOD **proved by exposure tests**

Four years of intensive exposure testing and formulation development have proved the advantages of Dow's water based all-latex system (primer, topcoat and repaint) for exterior wood. Exposures on house sidings in Michigan, California and Texas showed complete freedom from blistering, peeling and other deterioration. These same tests proved Dow Latex 2647 to have color retention *superior* to any conventional finish.

The unique ability of Dow Latex 2647 to form an unusually durable primer/topcoat system on exterior wood is due primarily to its properties of water resistance, adhesion to wood, and optimum moisture vapor transmission rate. Dow Latex

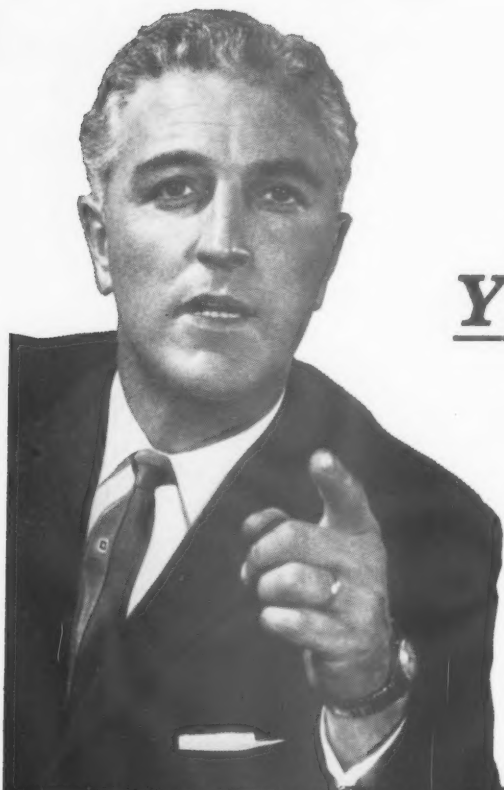
2647 shows resistance to liquid water passage equal to a good oil paint control, while other latexes tested showed low water resistance and/or poor adhesion to wood.

The resulting durability, coupled with ease of application and fast drying of the water based paints, gives paint manufacturers a complete new system of all-latex primer, topcoat and repaint finishes.

For more information on Dow Latex 2647, or for assistance in formulation, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Coatings Sales Department 1906DL11.

See "The Dow Hour of Great Mysteries" on NBC-TV

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN



*Here's why
YOU should be
thinking about
Polyester
Wood Finishes*

- 1** Your customers are taking a long look at the better appearance and mar-resistance of polyester wood finishes—especially on furniture.
- 2** They know that their customers will soon be demanding the advantages of polyester finishes already available to European customers.
- 3** The European paint industry has outstripped the U. S. in developing polyester wood finishes to meet this challenge.
- 4** Some U. S. manufacturers are already using polyester wood finishes and others are completing trial runs.
- 5** Unsaturated polyester resins permit you to formulate oil-free surface coatings with these outstanding properties:

Resistance to chemicals and solvents
Resistance to abrasion and wear • Resistance to light and weathering
Cold check resistance • High build • Print proof

RCI has POLYLITE polyester resins especially developed for wood finishes. Write today for Technical Bulletin SC-37 which will provide you with technical data and suggested formulations.

Creative Chemistry . . . Your Partner in Progress



REICHHOLD

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol • Hydrochloric Acid
Formaldehyde • Phthalic Anhydride • Maleic Anhydride • Ortho-Phenylphenol • Sodium Sulfite
Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate • Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N. Y.



(REG. U.S. PATENT OFFICE)

NOVEMBER
1960

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOLUME 50
NO. 12

COPYRIGHT © 1960 PUBLISHED BY POWELL MAGAZINES, INC., EXECUTIVE AND EDITORIAL
OFFICES 855 AVE. OF THE AMERICAS, NEW YORK 1, N. Y. BRyant 9-0497

FEATURES

- Pigment Dispersing Aids, by Francis J. Prescott 31
Methyl and vinyl pyrrolidone found to be effective dispersing aids for organic and inorganic colors.
- Particle Hydrated Aluminum Silicates as Flatting Agents, by George P. Larson 39
By use of this low-cost type of flatting agent, more free binder is available in a given system, which is reflected as improved enamel hold-out, lower viscosity and better scrub resistance.
- The Coating Corner, by Edward Anthony 47

PRODUCTION

- New Product Development, by Lawrence Shatkin 53
Before introducing a new product, top management must review the entire project from the standpoint of risk taking, profitability and financial requirements.
- Radiant Heating for Varnish Production 57
Sinclair Valentine finds radiant heating helps increase varnish production rates, improves quality and increases kettle life.
- New Developments 61
- New Equipment and Raw Materials 65
- Patents 70
- Technical Bulletins 74

AEROSOL COATINGS

- Testing Aerosol Products, by Dr. John J. Sciarra 83
Moisture determination and analysis of propellants are discussed in this installment.
- Aerosol News and Developments 86

DEPARTMENTS

- Comment 7
- News 93
- Calendar of Events 93
- Meeting Dates of Societies for Paint Technology 96
- Personnel Changes 97



NEXT ISSUE

Epoxy Resin and Pyromellitic Dianhydride-Glycol Systems will be featured in our December issue. The article discusses several promising epoxy coating formulations cured by anhydride at room temperature.

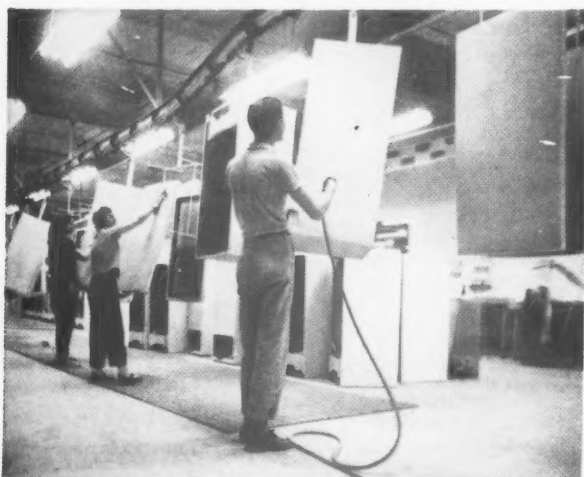
PAINT and VARNISH PRODUCTION is published monthly except semi-monthly in March at Easton, Pa., by Powell Magazines, Inc., John Powell, president; Ira P. MacNair, vice-president and treasurer; Alan P. Danforth, vice-president; Alice L. Lynch, secretary. Entered as second class matter at Post Office at Easton, Pa., Jan. 30th, 1952, under the Act of March 3, 1879. SUBSCRIPTION RATES POSTPAID: United States and Canada, 1 year \$4.00; 2 years \$7.00. Mexico and Pan-American Countries, 1 year \$5.00; 2 years \$8.00. All other countries, 1 year \$8.00; 2 years \$15.00. Remit cash in advance, with order, by bankers draft on New York funds. SINGLE COPIES: Current issue: \$0.50; all back numbers: \$1.00. Convention issue: \$1.00. Review and Buyers' Guide: \$5.00. Bound volumes: \$15.00 per vol. when available. We cannot guarantee to supply back numbers and claims for missing numbers cannot be granted if received more than 60 days after date of mailing. Subscribers should promptly notify circulation department of any change in address, giving both old and new addresses and by sending address label. EDITORIAL AND EXECUTIVE OFFICES: 855 Avenue of the Americas, New York 1, N. Y. BRyant 9-0497. Printed in U. S. A.



METHYL ETHYL KETONE — A solvent used in the manufacture of many lacquers which provide durable surface coatings for fine furniture. Of high purity and low water-content, it can provide maximum solvent power at low cost.



DICYCLOPENTADIENE — Used as an extender for drying oils in varnish manufacture, it reduces the cost of the finished product. As a modifier for semi-drying oils, it upgrades them by approaching drying oils in reaction and drying time.



NEW BUTON* RESINS — Formerly called C-Oil and Butoxy Resins, they are highly compatible with a broad range of modifiers and solvents. Their properties include excellent adhesion, high gloss and high abrasion resistance.



TECHNICAL ASSISTANCE — At the Enjay Buton testing laboratory the most modern equipment and methods are always at work to help customers in the solution of technical problems and new product applications.

HOW ENJAY SERVES...the surface coatings industry

Enjay offers the surface coatings industry the following high quality materials for all types of surface coatings, paints, lacquers and varnishes: Ethyl Alcohol • Isopropyl Alcohol • Secondary Butyl Alcohol • Ethyl Acetate • Isopropyl Acetate • Secondary Butyl Acetate • Acetone • Methyl Ethyl Ketone • Dicyclopentadiene • Butadiene • CTLA Polymer •

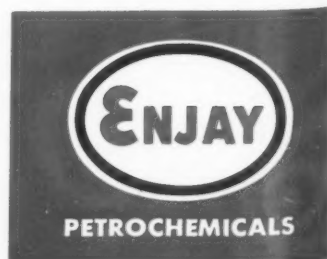
Naphthenic Acid • New Buton Resins. For technical assistance or to order Enjay chemicals contact the nearest Enjay office.

HOME OFFICE: 15 West 51st Street, New York 19, New York. OTHER OFFICES: Akron • Boston • Charlotte • Chicago • Houston • Los Angeles • New Orleans • Plainfield, N. J. • Southfield, Mich. • Tulsa *Trademark

EXCITING NEW PRODUCTS THROUGH PETRO-CHEMISTRY

ENJAY CHEMICAL COMPANY

A DIVISION OF HUMBLE OIL & REFINING COMPANY



EDITORIAL

COMMENT

Pre-Coated Steel for Automobiles

IN predicting what the 1971 automobile will look like, Detroit engineers agree that the range of cars on the market will be much broader than it is today. The buyer will be able to choose just about any size car he wants. This may be a four cylinder "bug" to a big "Land Cruiser." Of course there will be many mechanical changes and innovations, such as front-wheel drive, central hydraulic system, improvement in suspension, elimination of chassis lubrication, etc.

What about the finish? The possibility for all-plastic bodies are good, but only for those models made in very limited quantities. But where big volume is involved and large sheets are necessary, steel is the preferred material. To eliminate the cost of metal-finishing, automotive engineers are looking for pre-coated steel sheets which can be formed and joined.

Some progress in this direction has taken place within the last eighteen months. For example, there are a number of metal processors who coat flat steel sheets with vinyl dispersions before fabricating them into finished forms. U.S. Steel is offering a vinyl coated steel sheet in various textures; color is on a custom basis. According to U.S. Steel, this coated product shows excellent scuff, abrasion, and stain resistance. Because of its mechanical toughness, the product lends itself to most common fabricating operations such as shearing, slitting, bending, punching, deep drawing, and roll forming. The coated sheets can withstand a 30 percent elongation and may be bent as much as 180 degrees without impairment to the vinyl coating. Durability is said to be excellent.

However, one of the big problems with this type of coating is touch up. At the present time, there is no satisfactory method to touch up scratches and other film defects. If and when

this problem is solved to the satisfaction of Detroit, we can expect a surging interest in pre-coated steel for automobile production.

Automatic Lacquer Production

THE manufacture of lacquers by automatic means is now a reality. Considered as one of the most modern lacquer installations in the United States, the Wolverine Finishes' factory at Morganton, North Carolina uses push-buttons to control the type and amount of ingredients which go into the manufacture of a particular lacquer formulation. By means of intricate valves, the system feeds up to six different materials at a time into mixing tanks.

Described in a recent issue of *Chemical Progress* published by *Union Carbide Chemicals Company*, this system requires that the operator simply push the proper set of buttons which correspond to appropriate storage tanks and then dials in the necessary amounts. Solid materials are added through a hopper above the mixing tank. For the sake of quality, each product leaving the mixing tank passes through a set of filter beds. In production, the electronic equipment accepts a punched card that resets the control board and automatically prepares the equipment for the next batch.

Besides proportioning the ingredients, the control board regulates the flow of both solvents and diluents into the mixing tank, controls stirring of ingredients, operates air compressors, and works the ventilating systems necessary during the mixing process, plus keeps a running inventory of the raw materials in each storage tank.

Without question automation has moved into the paint industry. We will undoubtedly see more of these installations in the not-too-distant future.

**LASTS 3 TIMES
LONGER!**



HIGH DENSITY ALUMINA MILL LINING BRICK

Longer life! Less relining! Lower costs! Minimum pickup! 1½-inch, 2-inch and 2½-inch thicknesses!



Lifter bars available!

MADE IN STANDARD DENSITY, TOO

Write for information today!



McDANEL

REFRACTORY PORCELAIN COMPANY
BEAVER FALLS • PENNSYLVANIA



Serving Administration and Technical-Production Management of Coatings Manufacturing Plants

Published monthly by
POWELL MAGAZINES, INC.
855 Ave. of the Americas
New York 1, N. Y.
BRyant 9-0497

PUBLISHER
JOHN POWELL

EDITOR
ANTHONY ERRICO

EDITORIAL STAFF
Marvin C. Feinstein,
Assistant Editor
J. P. Danforth, *Art Editor*
Lawrence Shatkin, *Production*
Vladimir Slamecka, *Foreign*
E. G. Roberts, *Aerosol Coatings*
W. Philip Leidy, *Editorial Assistant*

BUSINESS STAFF
Alan P. Danforth, *General Manager*
Abraham Mann,
Production Manager
Harold C. Kinnaman, Jr.,
Circulation Manager

ADVERTISING SALES STAFF
Philip J. Seavey,
Advertising Manager

New York
Powell Magazines Inc., 855 Ave. of the Americas, New York 1, N. Y.
BRyant 9-0497

Chicago
R. D. Henriquez & Associates,
549 W. Washington St., Chicago 6,
Ill. Central 6-1626.

West Coast
San Francisco: Morton McDonald,
c/o McDonald-Thompson Company, 625 Market St., San Francisco 5, Calif. EXbrook 7-5377

Branch Offices of McDonald-Thompson Co.—Los Angeles, Calif., Denver, Colo., Portland, Ore., Seattle, Wash., Houston, Tex., and Dallas, Tex.

MEMBER BUSINESS

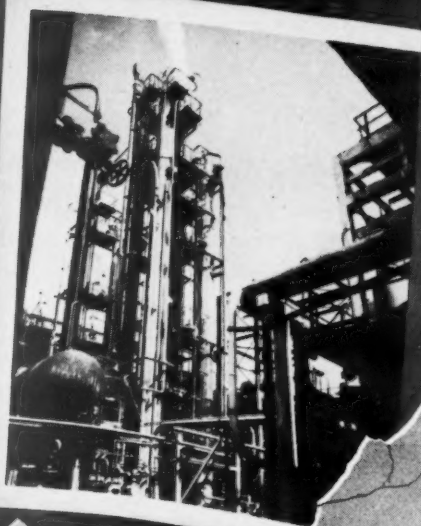


PUBLICATIONS AUDIT, INC.

**Just
out!** →

Methanol^{CSC}

Specifications
Technical Data
Handling & Storage
Toxicity • Uses
Test Methods



NEW METHANOL GUIDEBOOK

Just off the press — the new CSC Methanol Guidebook. It's packed with solid "meat" . . . and it's yours without obligation. 32 pages . . . 36 useful tables, graphs and charts . . . informa-

tion sections include specifications, chemical properties, physical properties, uses, toxicology, shipping, handling, storage and specification test methods. *Mail coupon for your free copy.*

INDUSTRIAL CHEMICALS DEPARTMENT

COMMERCIAL SOLVENTS CORPORATION

250 MADISON AVENUE, NEW YORK 16, N. Y.

Please send me the new CSC METHANOL GUIDEBOOK.

NAME _____ TITLE _____

COMPANY _____ STREET _____

CITY _____ ZONE _____ STATE _____

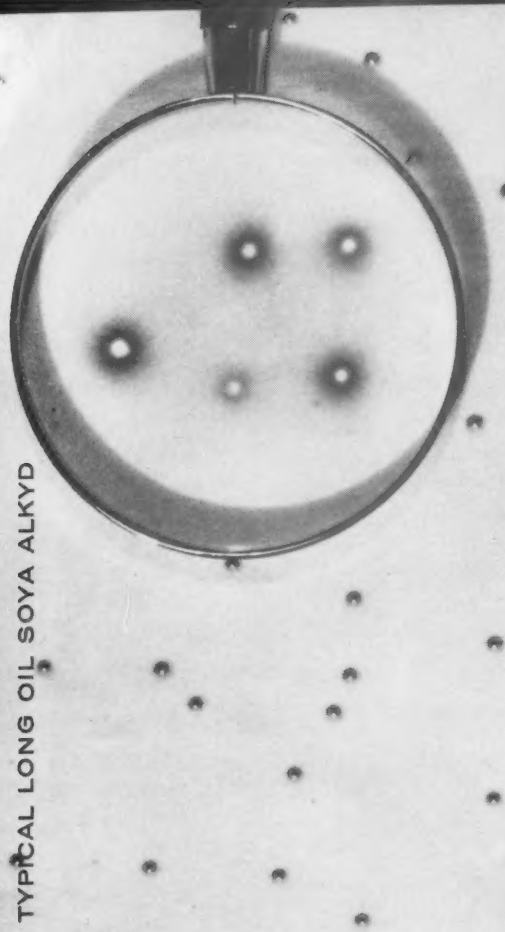


AROPLAZ 1221



Magnified drawdowns on glass panels after 18 months' storage at room temperature indicate clearly the superior seeding resistance of AROPLAZ 1221. Note how the seeds in the long oil soya

TYPICAL LONG OIL SOYA ALKYD



alkyd are transparent and resemble glass beads. Backlighting the drawdown panels helps to distinguish seeds from foreign particles and pigment agglomerates.

**new long fall oil alkyd
minimizes seeding with
zinc oxide pigmentations**

NEW

aroplaz 1221

for interior and exterior
architectural enamels

From ADM comes a new long oil isophthalic alkyd that lets you capitalize on zinc oxide pigmentation for maximum color retention and yet have extraordinary resistance to seeding. Even in zinc-free pigmentations, AROPLAZ 1221 shows better color retention than equivalent formulations with conventional soya alkyls.

Made with select tall oil fatty acids, AROPLAZ 1221 has passed more than 18 months of testing with zinc oxide pigmentations without a trace of seeding. Tests also have confirmed that AROPLAZ 1221 provides the other factors essential to quality architectural gloss finishes:

Initial color and gloss are excellent. So are color- and gloss-retention. AROPLAZ 1221 is highly durable. After 12 months' exposure at 45° South, there is only marginal difference between the AROPLAZ 1221 coatings and the quality soya alkyd controls.

For complete technical data on AROPLAZ 1221, write, wire or call your ADM representative or ADM Minneapolis. You'll get prompt attention . . . and information on how to save money using ADM's AROFLAT 3055 with new AROPLAZ 1221 in semi-gloss enamels. Get in touch today.



**Archer-
Daniels-
Midland**

729 Investors Building
Minneapolis 2, Minnesota

Chemical Group
RESINS • PLASTICS
INDUSTRIAL CHEMICALS



Clarence Drisko, Plant Supt., and C. R. Terhune, Technical Director, Farwest Paint Mfg. Co., Seattle, Wash.

GEN-FLO[®] solved our latex inventory problem

"Gen-Flo has taken our latex inventory out of the problem stage! We no longer have to tie up valuable capital and storage facilities with a variety of latices, because Gen-Flo has proved *right* for *all* our rubber-base formulations. Inventories are held to a sensible minimum, too, because Gen-Flo shipments are geared to our production schedule," says Charles Terhune, Technical Director of Farwest Paint Company, Seattle, Washington. If you're in business to manufacture quality rubber-base paint at a profit, you should try Gen-Flo styrene-butadiene latex in your operation. Write for technical data and formulations today.

THE GENERAL TIRE & RUBBER COMPANY CHEMICAL DIVISION • AKRON, OHIO

Chemicals for the rubber, paint, paper, textile, plastics and other industries: GENTRO SBR rubber
GENTRO-JET black masterbatch • GEN-FLO styrene-butadiene latices • GEN-TAC vinyl pyridine
latex • GENTHANE polyurethane elastomer • ACRI-FLO styrene-acrylic latices • VYGEN PVC resins
• KURE-BLEND TMDT masterbatch • KO-BLEND insoluble sulfur masterbatch

GEN-FLO[®]

balanced to assure
maximum

Freeze-thaw stability
Scrubbability
Cleansability
Interchangeability
Mechanical stability

Creating Progress
Through Chemistry





A paint man's two best friends

Of course we mean Thixcin® R and M-P-A®, the Baker additives unsurpassed for sag resistance and non-settling. That's what makes them particularly attractive to paint men.

THIXCIN R . . . the best additive for paints processed at moderate temperatures and employing low KB solvents and oil vehicles. M-P-A . . . the non-seeding additive for processing at higher

temperatures, effective with all solvents.

THIXCIN R and M-P-A, developed solely by Baker, are your best insurance for easy brushing and flow control. Ask your Baker salesman to introduce you to the paint man's two best friends, and their use in *your* formulation. Baker plants at Bayonne and Los Angeles, offices and warehouses in principal cities.

7417-A

the **Baker** ESTABLISHED 1857 **castor oil company**
BAYONNE, NEW JERSEY

**Step up GLOSS and RESTORATION of GLOSS
Properties in your Auto Finishes with...**



HORSE HEAD R-750 TITANIUM DIOXIDE

The pigment is especially processed to provide automotive lacquers and enamels with superior gloss—gloss that is readily maintained by easy polishing.

HORSE HEAD R-750 will also give excellent color, hiding power, fine texture, and ease of dispersion in the formulation of top-grade auto finishes.

Test it to prove it to yourself. We will be glad to supply a sample.



THE NEW JERSEY ZINC COMPANY

Also Distributed by

VAN WATERS AND ROGERS SEATTLE • PORTLAND (ORE) • SPOKANE • VANCOUVER, B.C. • DALLAS • HOUSTON
ST. LAWRENCE CHEMICAL COMPANY, LTD. TORONTO, ONT. • MONTREAL, QUE.

Founded 1848

160 Front Street, New York 38, N. Y.

ATLANTA • BOSTON
CHICAGO • CLEVELAND
LOS ANGELES • OAKLAND



A NEW IN 1961 FOR AND

A new Dow Badische plant for manufacturing n-Butanol and iso-Butanol is scheduled to go on stream late in 1960. These products will be marketed by The Dow Chemical Company and are available singly or in mixed shipments with other Dow products such as—

Dowanol® (Dow glycol ethers) • Ethylene glycols • Propylene glycols
Glycerine • Chlorinated solvents

SOURCE n-BUTANOL iso-BUTANOL

Dow Badische is a new company owned jointly by The Dow Chemical Company and Badische Anilin und Soda Fabrik, Overzee, N.V. Dow Badische, initially operating in the field of acetylene chemistry, unites American and European production and research know-how and couples them with American marketing skills. These new alcohols are the first developments for other product lines.

For more information, write to The Dow Chemical Company, Midland, Michigan.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

See "The Dow Hour of Great Mysteries" on NBC-TV





DOES EVERYTHING BUT CLEAN THE BRUSH!

"Cargill Polyurethane is the vehicle for the most versatile wood finish we've ever sold"

—G. D. Hough, President, North Star Paint & Varnish Co.

"We call it *Velv* because it brushes out and dries quickly to a velvety finish without rubbing or waxing. But that's just part of the story . . .

"Polyurethane's tough, flexible qualities make *Velv* unusually resistant to scuffing and marring. And it's waterproof and alcoholproof.

"It's a true all-purpose coating—primer, sealer and finish coat, all in one can, for interior or outside jobs alike.

"You'll probably guess that *Velv's* a sales success. It is. It is the fastest selling new product that we have ever introduced."

Mr. Hough's company is one of many coatings manufacturers who have found Cargill oil-modified polyurethanes to be ideal vehicles for their formulations. For specifications, suggested formulations and uses, write:



CARGILL, INCORPORATED

200 Grain Exchange, Minneapolis, Minnesota, Dept. 105
basic supplier to the coatings industry




AQUEOUS BASE?

use
**Hydrophilic
extenders**



ASP

ALUMINUM SILICATE PIGMENTS



The trend is to water-based latex paints . . . for use both indoors and outdoors. The ability of latex paints to withstand exposure depends greatly on the characteristics of their extender pigments. Performance tests by M C P of available extenders in 5 major types of outside latex paints have shown that M C P Aluminum Silicate Pigments (ASP 400) show less chalking, better viscosity stability and superior color retention.

Write today for technical data sheet #209 for all the information on the outstanding superiority of M C P Aluminum Silicate Pigments. Samples also available.

Please send ☐ T.I. 209 ☐ Sample ASP 400

Name _____

Firm _____

Address _____

City _____ State _____

Minerals & Chemicals Philipp CORPORATION

1662 Essex Turnpike, Menlo Park, New Jersey



announcing large
scale production
of two more **ORONITE**
dibasic intermediates

MALEIC ANHYDRIDE • • • • • FUMARIC ACID

Write for new
Maleic &
Fumaric
Brochure



Since pioneering the production of phthalic anhydride from ortho-xylene and later producing the first isophthalic acid, Oronite continues to grow as a major source of supply for the important dibasic intermediates.

With completion of its new large scale maleic and fumaric plant Oronite becomes one of the world's largest petrochemical resources for multi-functional building block chemicals. Why not talk over your requirements with Oronite?



CALIFORNIA CHEMICAL COMPANY **ORONITE DIVISION**

EXECUTIVE OFFICES • 200 Bush Street, San Francisco 20, California
SALES OFFICES • New York, Boston, Wilmington, Chicago, Cincinnati, Cleveland, Houston,
Tulsa, Los Angeles, San Francisco, Seattle
FOREIGN AFFILIATE • California Chemical International, Inc., San Francisco, Geneva, Panama



PIGMENTS

Discover New Profits. Glidden pigments can add to the sales potential of your products. Glidden Zopaque® Titanium Dioxide, the finest white pigment available, exhibits excellent dispersion properties, low reactivity and exceptional whiteness, gloss, color retention and hiding power. Non-bleeding, non-fading Glidden Cadmolith® reds and yellows are insoluble in all vehicles. The ten soft, easy-to-grind shades impart high opacity and resist acids, alkalies and heat.



THE GLIDDEN COMPANY

FINEST PIGMENTS FOR INDUSTRY

Chemicals Division • Pigments and Color Dept.

Baltimore 26, Maryland

Have you evaluated these Wyandotte products...lately?

Wyandotte has developed a wide range of inorganic and organic chemicals that do their best work in your paint formulations. Chemicals indispensable for basic formulating needs. Chemicals that will improve the quality of your paint without increasing costs. Chemicals that help you maintain your present quality — while reducing costs. And all Wyandotte chemicals can be counted on for commercial uniformity and purity.

REDUCES PIGMENT COSTS

PURECAL® — a series of precipitated calcium carbonates of exceptional uniformity, whiteness, and chemical purity. For best flow and leveling, particles are agglomerate-free and consistently cubical in shape within each grade structure.

PURECAL O is used as a pigment extender in paints and enamels. Whiter than most prime pigments, PURECAL O can replace up to 10% of titanium dioxide without decreasing brightness or opacity. And all, or part, of "less-bright" extenders may be replaced with PURECAL O without adding extra prime pigments for masking. PURECAL O also prevents settling of coarser pigments, helps prolong shelf life.

PURECAL T is ideal as a paint additive because of its extremely fine particle size. Small additions of PURECAL T raise viscosity rapidly and eliminate sagging without sacrificing gloss. When small amounts of PURECAL T are added to the grinding mix, finer grinds are obtained.

PRODUCES INEXPENSIVE EMULSIFIERS

CAUSTIC SODA, added during the refining of linseed oil, removes impurities in the form of alkali soaps. These alkali soaps provide inexpensive, efficient emulsifying agents for emulsion paints. Caustic soda is also an ingredient in cement paints, cold-water paints, and paint removers.

SODA ASH is an important ingredient in the manufacturing of prime pigment ultramarine, a complex sodium aluminum sulfate.

REGULATES VISCOSITY; SUSPENDS PIGMENT

PLURONIC® POLYOLS are surface-active block-polymers available in variable hydrophilic-hydrophobic balances. They act in latex paints as pigment dispersing and leveling agents and help control viscosity. In similar functions, the PLURONIC POLYOLS have also found usefulness in tube-tints and other water-based systems.

Put this line of Wyandotte products to the test in your own paint formulations. Write us today, detailing your needs. We'll be glad to send you the technical data and samples you require. *Wyandotte Chemicals Corporation, Dept. 888, Wyandotte, Michigan. Offices in principal cities.*



**WYANDOTTE
CHEMICALS**

MICHIGAN ALKALI DIVISION

PACING PROGRESS WITH CREATIVE CHEMISTRY®

/?

ing of
m of
inex-
mul-
dient
paint

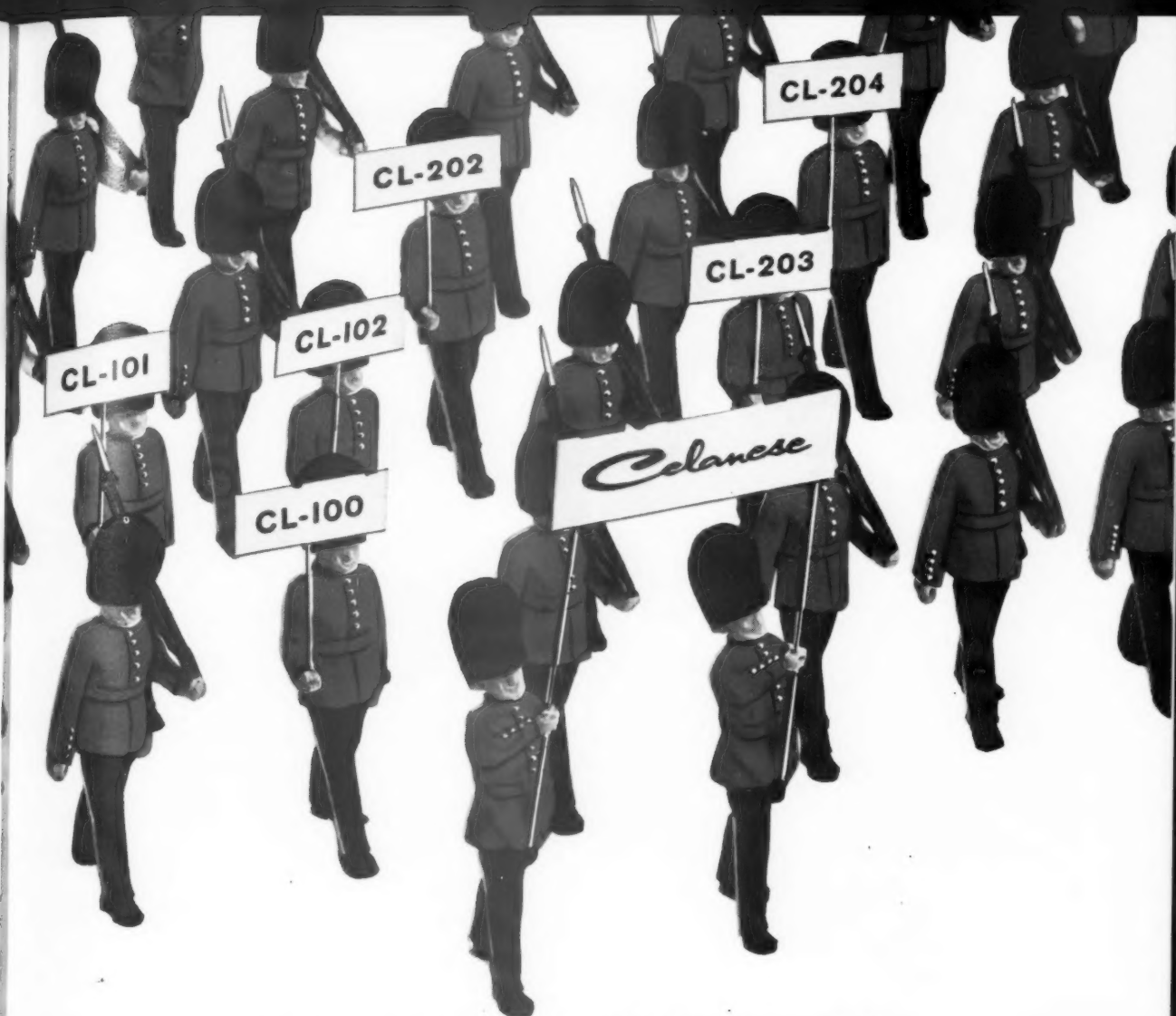
the
rine,

MENT

rock-
illic-
ints
and
the
ness
ems.

the
e us
d to
you
on,
in

RY®



IN STEP WITH YOUR NEEDS... Celanese PVAc Emulsions

This army of paint emulsions is yours to command. And it's backed by the Celanese policy of service and supply, designed to keep you out in front in the competitive battle. Complete data on the properties of these Celanese emulsions—and the paint formulations you can make from them—are yours for the asking. Simply write for technical bulletins, stating your area of interest, to: Celanese Chemical Company, Dept. 558-K, 180 Madison Avenue, New York 16, N. Y.



Celanese Chemical Company is a Division of Celanese Corporation of America
Canadian Affiliate: Canadian Chemical Company Limited, Montreal, Toronto, Vancouver

CELANESE PVAc EMULSIONS

CL-100

General purpose, medium particle size homopolymer emulsion with wide application.

CL-101

General purpose polyvinyl acetate homopolymer emulsion, of relatively high molecular weight resin.

CL-102

Outstanding polyvinyl acetate homopolymer emulsion designed primarily as a paint vehicle. Very fine particle size—easily formulated.

CL-202

Polyvinyl acetate copolymer.

Paints formulated with CL-202 exhibit good scrub resistance, resistance to water spotting, excellent color and sheen uniformity.

CL-203

Vinyl-Acrylic emulsion with excellent balance of properties. Very fine particle size lends itself as a vehicle for water based paints.

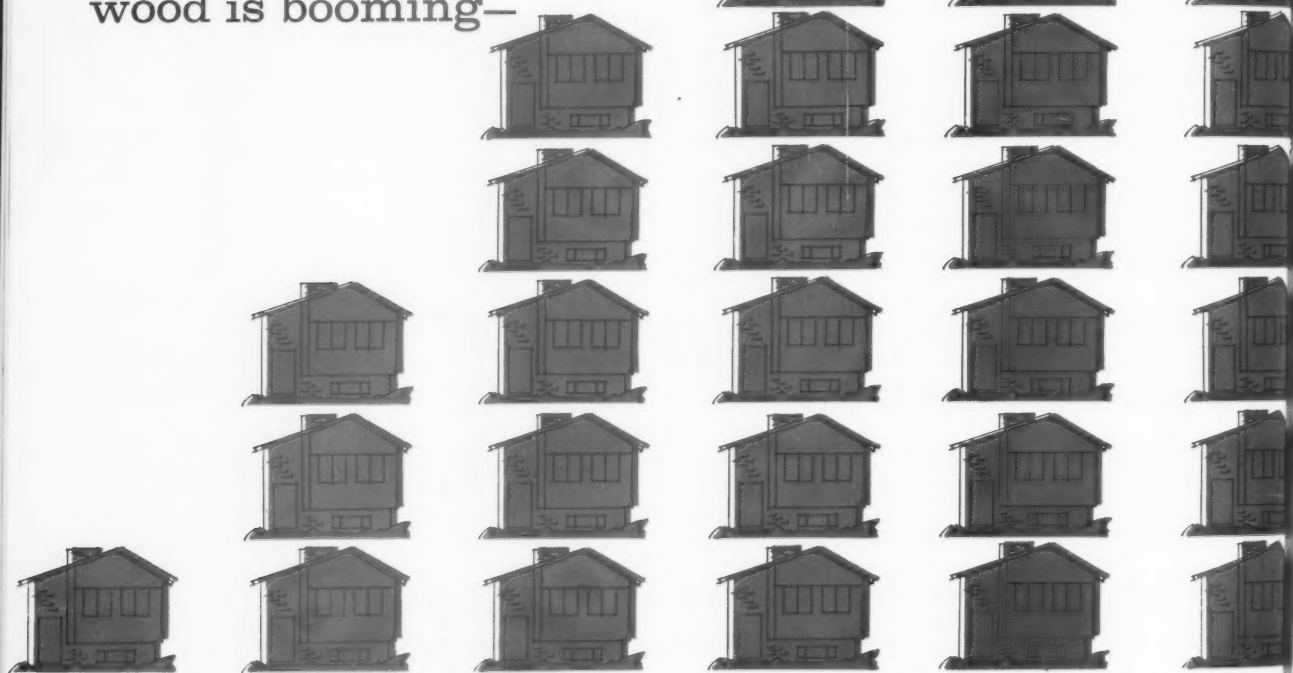
CL-204

Polyvinyl acetate copolymer. Outstanding capacity for binding pigments at high loading levels. Paints based on CL-204 have excellent film integrity and toughness.

Celanese®

Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16

The market for
exterior latex paints over
wood is booming—



thanks to time-tested ...

LYTRON[®] 680

These new paints can be applied easily and quickly—even in the cooler weather months. They are moisture resistant in minutes, dry within the hour, safe from dirt, dust, insects. They are mildew and fume resistant, clean up with soap and water and available in a wide range of bright colors.

The vehicle in the most successful of these paints is Lytron 680—the result of over 9 years of Monsanto development—including better than 5 years testing of commercially formulated paints on houses in all representative climatic areas. The Lytron 680 vehicle has a wide latitude of pigment acceptance—insures process uniformity and color accuracy. Lytron 680 paints are fume and mildew resistant because of moisture vapor transmission characteristics. Fast drying prevents dirt and foreign material from collecting on the paint surface. Lytron 680 paints also have minimum dirt pickup during film life.

Formulate your exterior latex paints with Lytron 680 and get in on the booming market for these new fast selling paints. Write for a free copy of a new brochure, PIB No. 1090, to Monsanto Chemical Company, Plastics Division, Room 793, Springfield 2, Massachusetts.

Visit our exhibit at the
Paint Industries Show,
Chicago, Oct. 29-Nov. 2,
Booths 532-533



MONSANTO DEVELOPER IN **PLASTICS**

AURASPERSE INORGANICS

Quality acceptance has placed
Harshaw Aurasperse Inorganic
Dispersions **IN FRONT.**

Consider this significant fact in
insuring the quality of your
water systems.

Among the many dispersion items
available from nationwide warehouse
stocks are these:

W1081 Sun Yellow C

W1021 Yellow Oxide

W3041 Red Oxide

W3247 Burnt Umber

W3105 Cadmium Red

W1069 Cadmium Primrose

W308 Titanium White-Rutile

W4013 Ultramarine Blue

W6017 Chromium Oxide Green



by Harshaw

Samples and information on these or others of
this Aurasperse group available on request.



THE HARSHAW CHEMICAL COMPANY

1945 East 97th Street • Cleveland 6, Ohio

Chicago • Cincinnati • Cleveland • Hastings-On-Hudson, New York
Detroit • Houston • Los Angeles • Newark • Philadelphia • Pittsburgh

You get
CUMULATIVE
RUST PROTECTION
 if all three coats
 are made with

PERMOX®
1-4-3

(one-for-three)



Permox 1-4-3, Basic Lead Silico Chromate, is an effective, anti-corrosive pigment especially designed for all three paint coats . . . with rust inhibition in every coat! When used in all coats, maximum protection against rust becomes *cumulative*, each coat minimizing the possibility of corrosion arising from skips and holidays during application. More significantly, with Permox 1-4-3 it is now possible to obtain an anti-corrosive finish coat which permits the use of the same paint for spot priming and finishing.

Permox 1-4-3 is also characterized by excellent chalk resistance and low tinting strength. These qualities make possible the production of durable maintenance paints in an almost unlimited range of colors without sacrificing anti-corrosive qualities.

Suggested formulations for a wide variety of anti-corrosive and decorative paints designed for specific needs are yours for the asking. We welcome inquiries.

Permox 1-4-3 Conforms to ASTM Specification D-1648

Since 1843



EAGLE-PICHER

The Eagle-Picher Company • Dept. PVP1160
 Cincinnati 1, Ohio

Regional sales offices: Atlanta, Chicago, Cleveland,
 Dallas, Kansas City, New York, Philadelphia, Pittsburgh

West Coast Sales Agent, THE BUNKER HILL COMPANY, Chemical Products Division • Seattle • Portland • Oakland • San Francisco • Los Angeles



ASK
YOUR
VELSICOL
REPRESENTATIVE—
HOW TO MAKE
ROAD TESTED

TRAFFIC PAINTS THAT WIN THE BIDS!

Velsicol's X-37 Hydrocarbon Resins adds these "winning" features to your traffic paints: • Shorter Dry Time! • Lower raw material costs per gallon! • Greater hardness and adherence with more impact resistance! These aren't idle claims. They're all backed up by Velsicol research and field testing and proven profitable to bid winning formulators. Your Velsicol representative has the data and the know-how, look them both over soon!... or mail the coupon now for valuable free technical literature! Velsicol Chemical Corporation, 330 E. Grand Ave., Chicago 11, Ill.

VELSICOL

*Work with this man
... Your Velsicol
Representative,
a qualified chemist who
can help you make
better products
for less!*



VELSICOL CHEMICAL CORPORATION
330 East Grand Avenue, Chicago 11, Illinois
International Representative: Velsicol International Corp., C.A.
P. O. Box 1687 • Nassau, Bahamas, B.W.I.

PVP-110

Gentlemen: Please send me ☐ Your technical bulletin on X-37 for traffic paints.
☐ Please have any Velsicol representative call.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____



THE COLOR WON'T FADE WHEN IT'S PVAc PAINT

Tint retention is difficult to show in a photograph. But a single coat of phthalocyanine blue polyvinyl acetate copolymer paint applied to these shingles of the house shown in the inset hasn't faded noticeably after four years.

Take our word for it . . . or, if the location's not too far, take a look yourself. The house is at 11 Garfield Ave., Madison, New Jersey.

You get such lasting clean, bright colors when you formulate exterior paints with PVAc copolymer emulsions. At normal PVC levels, these paints dry rapidly to a tough, flexible film that remains tack-free. Hence,

there's no dirt pick-up—whites stay white without chalking . . . colors don't fade.

You'll also find PVAc paints easy to make . . . less costly to produce than other exterior emulsion types. Ask your copolymer supplier to show you exposure data for different PVAc systems, and to help you develop the best formula for your area.

For more information, write for our new brochure, "PVAc for Quality Exterior Paints." We'll also be glad to send you information on Airco Vinyl Acetate Monomer—the starting material for high-quality PVAc emulsions.



AIR REDUCTION CHEMICAL COMPANY

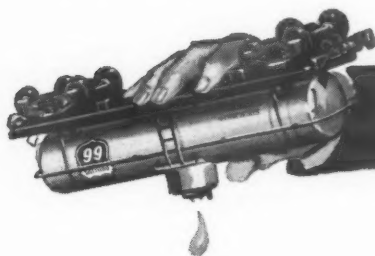
A division of Air Reduction Company, Incorporated
150 East 42nd Street, New York 17, N. Y.

Represented Internationally by Airco Company International

at the frontiers of progress you'll find . . .



How's Your Supply of



SOLTROL*

Odorless Mineral Spirits?

Is your supply of Soltrol running low because of an unexpected rush of business? Wire or phone your order . . . and relax! Your order will get immediate attention. Phillips modern production facilities assure a plentiful supply of Soltrol. Efficient loading facilities and intelligent traffic control assure prompt delivery. Additional benefits for Soltrol users are:

- **Controlled Evaporation.** Soltrol 130 provides conventional drying characteristics. Soltrol 170 maintains a longer wet edge. You can combine the two to get the exact drying time

you require. Compartmented cars containing both Soltrols are available.

- **Dependable.** Prompt, on-time deliveries assured by modern efficient production facilities.
- **Uniformity.** Careful refining, special handling and continuous quality checks assure dependable uniformity. Soltrol's excellent physical and chemical properties are protected every step of the way.

Test Soltrol in your own plant. Samples on request. Write, wire or phone your order for Soltrol today.

*A trademark



Also available in split cars

PHILLIPS PETROLEUM COMPANY
Special Products Division

Bartlesville, Okla.  FEderal 6-6600

**there's
only
one!**



Other companies may make nitrocellulose solutions, but only one, CELLOFILM, makes nothing else. CELLOFILM does not compete for your customers...Why buy from your competitors? Whether you buy in tankwagons or in drums... whether your solutions are as "thin as water" or "heavy enough to walk on"...whatever the combination of solvents—CELLOFILM will meet your requirements. See for yourself. Call or write for samples and prices.

CELLOFILM
nitrocellulose solutions

for over 40 years the solution for your problems

CELLOFILM INDUSTRIES, INC.
WOODRIDGE, N. J. • GENEVA 8-7100



When the heat's on

**- EVEN 1000 F° -
YOU CAN DEPEND ON**

ALUMINUM PAINTS BASED ON...

MARBON[®]

9200[®] RESINS

Complete Corrosion Protection

- with only one coat
- with minimum surface preparation
- in critical industrial atmospheres
- in applications up to 1000°F
- in all kinds of weather

Plus

- ease of compounding
- excellent can stability
- formulations to meet Federal Specification's TT-P-28a

AFTER 26 MONTHS ON THIS FURNACE STACK, application of aluminum paint based on Marbon 9200 Resin shows no sign of deterioration. Latest field report on this installation reveals both interior and exterior surfaces in excellent condition.

Write for complete details and samples

MARBON CHEMICAL
WASHINGTON



DIVISION **BORG-WARNER**
WEST VIRGINIA



Safflower oil formulations make all other WHITE house paints look yellow!

Make this positive test! Use Safflower oil as the base for your whitest exterior paint formulation. Compare to your present formula using any other oil base. Result: The Safflower base will produce an extremely brilliant white that makes other "true" whites look yellow or greyed.

Safflower produces a number of other outstanding advantages that will improve your formulations. Here are some of them:

NON-YELLOWING. Safflower paints have high non-yellowing characteristics not found in other oil paint formulations.

BRIGHTER COLORS. Colors pigmented with Safflower oil are brighter and clearer.

SUPERIOR THROUGH-DRY. Quick drying properties allow for recoating in shorter times.

EXCELLENT COVERING PROPERTIES. Plus high wrinkle resistance and dew flattening resistance.

STAND UP BETTER. Five year weather tests prove the durability of Safflower paints is equivalent to highest quality coatings with a linseed oil base.

For further information, write for our new brochure "Safflower Oil House Paints."

PACIFIC VEGETABLE OIL CORP.

Dept. PV1160 • 1145 SOUTH TENTH STREET • RICHMOND, CALIFORNIA

AGENT LIST

- ATLANTA, GEORGIA
Nottingham Co.
- BOSTON, MASSACHUSETTS
R. B. Huber Associates
- CHICAGO, ILLINOIS
Daniel G. Hereley Co.
- CLEVELAND, OHIO
Donald McKay Smith Company
- DALLAS, TEXAS
W. W. Richerson Company
- DETROIT, MICHIGAN
George E. Moser & Son, Inc.
- HOUSTON, TEXAS
Cron Chemical Corp.
- KANSAS CITY, MISSOURI
Ack Sales Company
- LOS ANGELES, CALIFORNIA
Pacific Vegetable Oil Corp.
- LOUISVILLE, KENTUCKY
The Argus Co.
- MILWAUKEE, WISCONSIN
J. W. Copps
- MINNEAPOLIS, MINNESOTA
Horton-Earl Co.
- MONTREAL, CANADA
B. & S. H. Thompson & Company, Ltd.
- NEW YORK, NEW YORK
Pacific Vegetable Oil Corp.
- PHILADELPHIA, PENNSYLVANIA
Baker Industrial Oils Co.
- PORTLAND, OREGON
W. Ronald Benson, Inc.
- SAN FRANCISCO, CALIFORNIA
Pacific Vegetable Oil Corp.
- SEATTLE, WASHINGTON
W. Ronald Benson, Inc.
- ST. LOUIS, MISSOURI
Ivan T. Bauman Co.
- TORONTO, CANADA
B. & S. H. Thompson & Company, Ltd.
- VANCOUVER, B. C.
W. Ronald Benson, Inc.

PIGMENT DISPERSING AIDS

Methyl and vinyl pyrrolidone found to be effective dispersing aids for organic and inorganic colors.

By
Francis J. Prescott*

METHYL- and vinyl pyrrolidone, which have been finding increased acceptance by the coatings industry because of their excellent solvating powers, have also proved to be effective dispersing aids for organic and inorganic pigments (1). These products impart softness to the pigments offering a means to facilitate grinding, to permit easy incorporation into coating systems and to increase the tinctorial strength of the pigments. Several methods of compounding have been investigated to determine the effectiveness of these additives as dispersing and grinding aids. Because methyl- and vinyl pyrrolidone are moderately high boiling liquids they ultimately are dissipated from the films so that they will not effect the water sensitivity of the films which is so often the problem with other types of dispersing aids.

Methylpyrrolidone is a colorless liquid having a mild odor. It is prepared by the reaction of methylamine with butyrolactone. Methylpyrrolidone is of extremely low toxicity; it has a high boiling temperature, is non-corrosive and shows good chemical stability and powerful solvent action. In Table 1 the chemical and physical properties are listed.

It is an excellent solvent for a great number of the synthetic resins and some of the natural derivatives, as well as for a number of inorganic salts.

In Table no. 2 we have listed a number of the synthetic resins which are soluble in methylpyrrolidone. Certain of these polymers are extremely difficult to put into other solvents, but methylpyrrolidone can serve as the carrier. Studies have shown that because of its high solvating power, methylpyrrolidone is of value in paint removing applications. The possibility of including it in formulations for removing coatings is worthy of consideration particularly because of its

Table 1
Chemical and Physical Properties of
Methyl- and Vinylpyrrolidone

| | N-Methyl 2-Pyrrolidone | N-Vinyl 2-Pyrrolidone |
|---------------------------|--|--------------------------|
| Physical Form | Liquid | Liquid |
| Boiling Point °C | 202 | 209 |
| Freezing Point °C | -24 | 13.5 |
| Flash Point (open cup) °F | 204 | 209 |
| Specific Gravity (25/4°C) | 1.03 | 1.04 |
| Solubility | Completely miscible with water and most organic solvents. | |

Table 2
Substances Soluble in N-Methyl-2-pyrrolidone

| Resins | Salts |
|------------------------------|--------------------|
| Polyvinyl Chloride 5% | Aluminum Chloride |
| Cellulose Triacetate 10% | Ammonium Molybdate |
| Mylar (hot) | Cobalt Chloride |
| Nylon (hot) | Lead Chloride |
| Zytel (hot) | Lead Acetate |
| Methyl Methacrylate Polymers | Zinc Chloride |

higher boiling point. This coupled with its high solvating power will give better penetration of the films and therefore removal from the sub-strata.

Vinylpyrrolidone is prepared by the reaction of pyrrolidone and acetylene. This unsaturated product is classified as a monomer useful in vinyl-type polymerizations. It is a liquid which is easily soluble in a host of organic solvents as well as water. It is of relatively low toxicity. The homopolymer of vinylpyrrolidone is well known as PVP. Its initial use was as a blood plasma extender followed by its use as a lacquer hair spray from aerosol systems. Vinylpyrrolidone is a reactive comonomer. Vinylpyrrolidone-vinyl acetate copolymers are also available commercially for a multitude of uses including hair lac-

*Supervisor, Sales Development, Market Research Section, Commercial Development Department, Dyestuff and Chemical Div., General Aniline and Film Corp.

Table 3
Lacquer & Solvent Systems

| Formulation (A) | | Formulation (B) | |
|---------------------------|------------|-----------------------------------|------------|
| ½ sec N/C Solution | | N/C Lacquer #3 | |
| RSN/C ½ Sec 40.0 p | 40.0 parts | N/C Solution A | 67.5 parts |
| Ethanol (in cotton) | 21.5 " | Glyptal 2477 (65% Xylol Solution) | 19.0 " |
| Ethyl Acetate | 23.1 " | Dibutyl Phthalate | 7.7 " |
| Butyl Acetate | 9.6 " | n-Butanol | 5.8 " |
| Butyl Alcohol | 5.8 " | | |
| Formulation (C) | | Formulation (D) | |
| Vinyl Lacquer | | N/C Lacquer Dye Solvent #3 | |
| "Vinylite" VMCH | 900 parts | Methanol | 40 parts |
| Methyl Isobutyl Ketone | 1200 " | Ethanol | 27 " |
| n-Amyl Ketone | 600 " | Toluol | 18 " |
| Toluol | 1200 " | Ethyl Acetate | 15 " |

Table 4

| Amount of Additive cc. | % Increase Tinctorial Strength-Lacquers | | | | | | | |
|------------------------|---|-----|-----|------------------|------------------|---------------|-----|-----|
| | N/C Lacquer | | | Diethyl Amine | Nitro Propane | Vinyl Lacquer | | |
| | MP | | VP | | | VP | | MP |
| | 0.7 | 0.3 | 0.7 | 0.7 | 0.7 | 0.3 | 0.7 | 0.7 |
| Iron Blue | +10 | +10 | +5 | 0 | 0 | +5 | +5 | +10 |
| Toluidine Red | +5 | — | — | — | — | — | — | — |
| Heliogen Viridine | Y+5 | — | — | — | — | +5 | +5 | |

Table 5

| Pigment | Hoover Muller Drawdowns—Litho Varnish | | | | |
|--------------------------------|---------------------------------------|-----|-----|--------------|--------------|
| | % Increased Tinctorial Strength | | | | |
| | Diethyl-Amine | MP | VP | Dispersant A | Dispersant B |
| Heliogen Blue BGN | 0 | +15 | +10 | — | — |
| Milori Blue 50-1750 | — | + 7 | — | 0 | — |
| Oxide Black F 313 N Conc. Pdr. | — | +30 | +10 | — | — |
| Pure Chromium Green Oxide | 0 | +30 | — | — | — |
| Heliogen Viridine Y Pdr. | 0 | +25 | +10 | +10 | +10 |
| Heliogen Green GA Pdr. | — | +25 | — | — | — |
| Toluidine Toner XR | — | +10 | — | — | — |
| Permanent Violet RL Extra Pdr. | — | +10 | — | — | — |

quers, strip coatings, etc. It has been found that vinylpyrrolidone readily copolymerizes with vinyl chloride, maleates, styrene, vinyl stearate, acrylates, acrylonitrile and a variety of other comonomers. The advantages of using vinylpyrrolidone as a comonomer are:

1. Improved dye receptivity.
2. Improved emulsification.
3. Improved strength.
4. Improved adhesion.
5. Improved heat distortion.

In polyester laminates it has been found that addition of small amounts of vinylpyrrolidone (generally five to ten percent on the total weight of resin) will improve the dry and wet strength of the laminates. This can be attributed to the superior adhesion and bond between resin and glass. This improved wetting results in greater glass economy and fewer rejects due to poor laminations (2). It has also been found that nylon cloth can more easily be bound to polyester glass laminates when vinylpyrrolidone is used in the formulation. Preliminary data indicate that the bonding strength is increased by as much as 40% with the addition of 5% vinylpyrrolidone on the weight of resin used to impregnate the nylon.

Lacquers

Several methods were used to determine the effectiveness of these additives as pigment dispersing aids for vinyl and nitrocellulose lacquers. Initially, pig-

ment pastes were prepared by mechanically stirring one part of pigment into 3 parts of methyl- or vinylpyrrolidone for five minutes. Agitation was continued for 5 minutes after the addition of 38cc. of dye solvent mixture #3 (Table 3) were added to 2 grams of the paste. Finally 60 grams of N/C lacquer #3 (Table 3) were added and stirring continued for an additional five minutes. Coatings were made with a 3-mil Bird Applicator on Kromkote and aluminum paper. For comparative purposes methylpyrrolidone were replaced with castor oil (AA cold pressed). Similar studies were also carried out with vinyl lacquers using dibutyl phthalate as the replacement for the pyrrolidone. In all cases the control coatings showed evidence of undispersed pigment agglomerates; in addition the pyrrolidone showed large increases in color development. Among the pigments evaluated were: Vulcan R Fast Red BBE, Permagen R Red Light, Heliogen R Blue BDS Powder, Hansa R Yellow 10GD, and Resoform R Fluorescent Yellow 3GP1

Further studies were carried out to determine whether methyl- and vinylpyrrolidone were effective pigment dispersing aids at levels at less than one percent of the total systems during ball milling of vinyl and nitrocellulose lacquers. In this study 0.7 and 0.3 parts of methylpyrrolidone and vinylpyrrolidone were added to 60 grams of nitrocellulose lacquer No. 3 (Table 3) and 38cc. of Dye Solvent

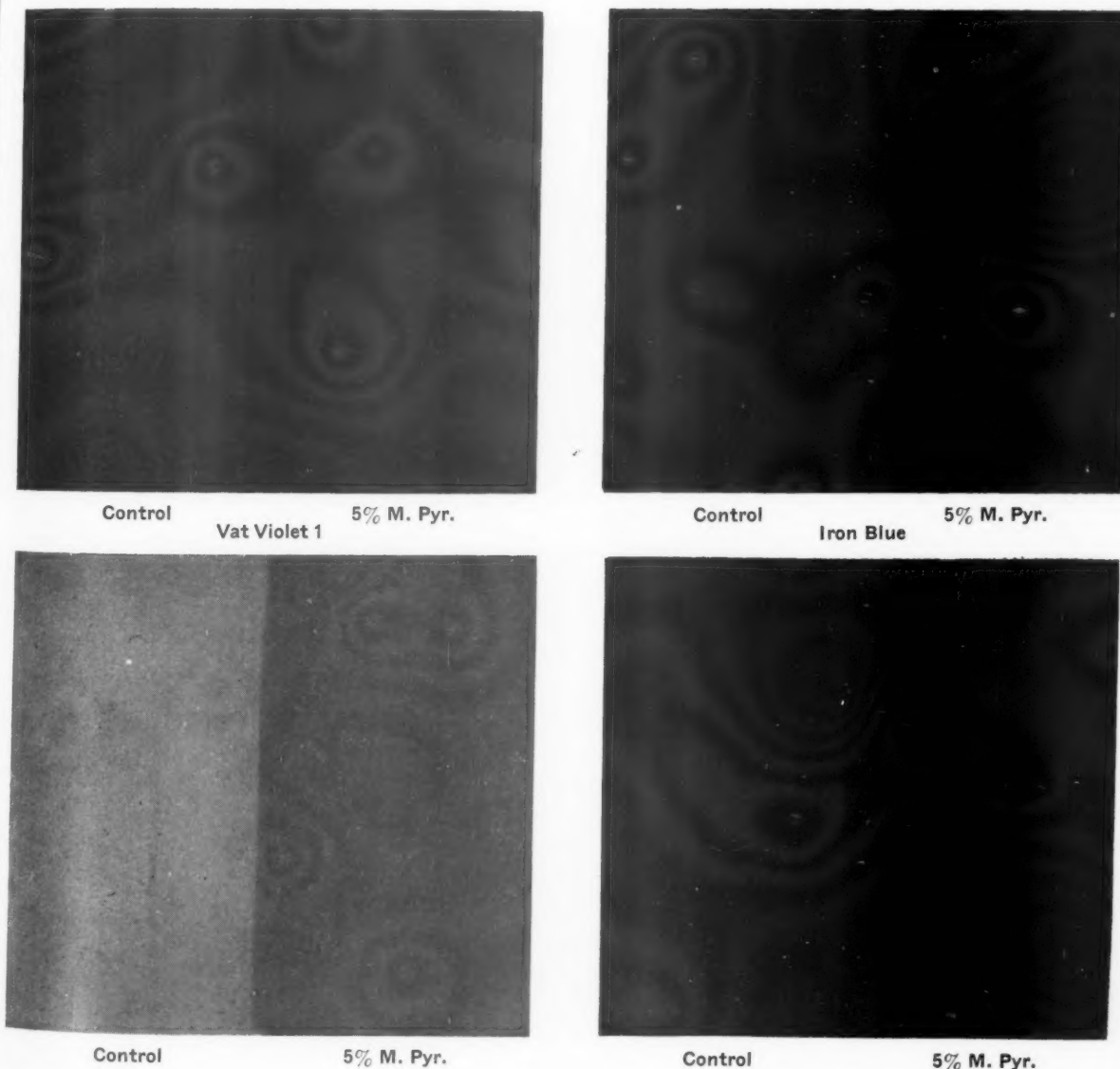
System No. 3 (Table 3) and 0.5 grams of pigment; similar amounts of the pyrrolidone were added to 60 grams of vinyl lacquer (Table 3) 20 cc. of methyl ethyl ketone and 0.5 grams of pigment. For comparative purposes diethylamine and nitropropane were used in place of the pyrrolidone. These systems were all placed into jars containing equal weights of 3/8" porcelain balls and rolled for approximately 8 hours. Coatings were made on aluminum paper with a 3 mil Bird applicator. The results of this study in which the coatings were compared with the systems without additive are presented in Table 4.

Increased tinctorial strength was used as the measure for improved pigment dispersion. Both methyl and vinylpyrrolidone were effective dispersing aids for the pigments tested. Methylpyrrolidone was more effective than the vinyl derivative in the Iron Blue systems. Neither diethyl amine nor nitropropane were effective in this study.

Paints and Inks

In the preceding studies the effect of concentrations of methylpyrrolidone ranging from 0.6 to 3 parts on the pigment were investigated. The possibility of utilizing lesser quantities of methylpyrrolidone as a pigment dispersing aid would make it more attractive to the coating formulators. Therefore, investigations were carried out to determine what effect levels of 40% and 50% of the pyrrolidone on the pigments would have on their dispersibility. The Hoover automatic muller was chosen in order to limit the variables and permit greater reproducibility. The effectiveness of 40% methyl and vinylpyrrolidone on pigments was first investigated. In this study a zinc oxide, linseed oil base (JW-23) was used as the vehicle. To five grams of this were added 50 mg. of pigment and one drop of additive. Subsequent evaluation of the drops indicated that the average weight was approximately 20 mg. These were inti-

Figure 1. Methyl pyrrolidone, pigment dispersing aid in litho varnishes.
Phthalo Blue Alkali Blue



mately mixed on the base plate of the Hoover automatic muller and then mulled two and four cycles at twenty-five revolutions per cycle under 150 lbs. pressure. Small amounts of drier were added so that the system would set. Drawdowns were prepared and comparisons were made between systems without pyrrolidone and a number of other minerals (Table 5).

In all cases methylpyrrolidone had a definite effect on color development. It was noted that diethylamine had no effect on the systems evaluated and that some of the proprietary type systems checked were not as effective as methylpyrrolidone. In general, methylpyrrolidone was superior to vinylpyrrolidone in the systems evaluated. In all cases, the results indicated that methyl pyrrolidone and vinyl pyrrolidone do improve the tinctorial strength of the pigments indicating improved dispersion.

The effect of methylpyrrolidone on the fineness of grind of a series of pigments was investigated. Grinding was not carried out to absolute fineness since the samples were only mulled for 4 cycles on the Hoover

automatic muller operated at 50 revolutions per cycle under 150 pounds pressure. To four grams of Varnish No. 1 (linseed oil) were added one gram of pigment and 2 drops (approximately 50 mgs.) methylpyrrolidone. These were thoroughly mixed on the base plate of the muller and fineness of grind checked on the National Printing Ink Research scale after 4 cycles. Methylpyrrolidone had a positive effect on the fineness of grind in all cases (Table 6).

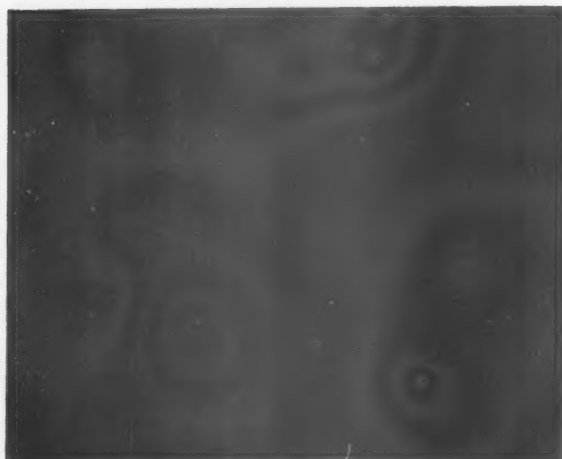
This was further borne out when the systems were bleached with a zinc oxide-linseed oil litho varnish JW 3. The effectiveness of methylpyrrolidone on color development may be seen in Figure 1.

The effect of methylpyrrolidone on pigments used to prepare conventional paint systems was also investigated. For this purpose four grams of an alkylized synthetic oil was used as the vehicle to which was added one gram of pigment and approximately 50 of methylpyrrolidone. These were mulled on the Hoover muller for four cycles at 50 revolutions per cycle under 150 pounds pressure. The masstones were let down into a commercially available deep

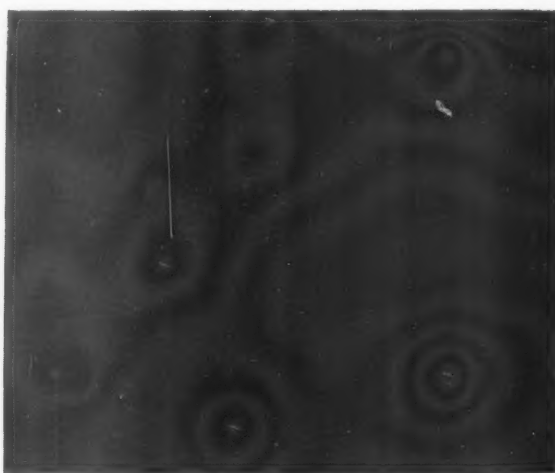
Figure 2. Methylpyrrolidone pigment dispersing aid for alkyd systems.
Black Oxide Permanent Violet RL



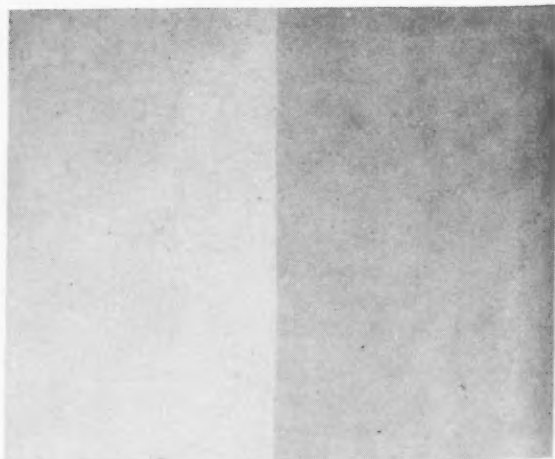
Control Phthal Blue 5% M. Pyr.



Control 5% M. Pyr.



Control Chrome Green 5% M. Pyr.



Control 5% M. Pyr.

Table 6
Fineness of Grind—Litho Varnish

| | Fineness of Grind* | | % Increased Tintorial Strength |
|------------------------------------|--------------------|------|--------------------------------------|
| | Control | M.P. | |
| Heliogen Blue BNC | 4-5 | 5-6 | +25 |
| Alkali Blue R Powder | 1-2 | 2-3 | +20 |
| Milori Blue | 1-2 | 2-3 | +15 |
| Indanthrene Brilliant Violet 4R | 3-4 | 4-5 | +30 |

*NPIR Scale

blending base alkyd based on the alkylized synthetic oil. The effectiveness of methylpyrrolidone as a pigment dispersing agent was noted. In all cases the tintorial strength of the coatings made from the masstones containing the methylpyrrolidone was improved. The results are also shown in Figure 2.

Table 7
Alkyd Systems—Hoover Muller

| | Parts of Base on Grind | % Tintorial Increase Over Control |
|------------------------------------|---------------------------|---|
| Heliogen Blue BG | 30 | +25 |
| Oxide Black F 313 N. Conc. Pdr. | 10 | +20 |
| Heliogen Viridine Y Pdr. | 30 | +15 |
| Permanent Violet RL Extra Pdr. | 30 | +5 |
| Permagen Fast Red Light Pdr. | 30 | +5 |

The alkyd drawdowns containing phthalo blue and iron oxide were exposed to ultraviolet light. Methylpyrrolidone did not appear to have any effect on the weathering properties of the systems. Some rudimentary scrubbability tests were also carried out with both the vinyl and nitrocellulose lacquers and with the alkyd bases, again there was no evidence of failure due to the presence of methylpyrrolidone.

Ball mill studies were also carried out. A concentrated color grind was prepared by replacing 15% of the xylol with methylpyrrolidone. These were ball milled for 72 hours and let down into a white enamel and coatings made. One of the coatings is shown on

the right side of Figure 3. The results and formulations are shown in Table 8. The results indicated the value of methylpyrrolidone as a dispersing aid in ball milling.

Table 8
Ball Mill—Alkyd Systems

| | Milori | Blue | Toluidine | Red |
|---------------------------|--------|------|-----------|-----|
| Beckosol 1307-05 | | | | |
| EL (g) | 200 | 200 | 200 | 200 |
| Xylol (cc) | 80 | 70 | 80 | 70 |
| Methylpyrrolidone (cc) | — | 10 | — | 10 |
| Pigment (g) | 20 | 20 | 20 | 20 |
| Tintorial Increase | | | | |
| Over Control % | — | +15 | — | +5 |

Master pigment systems were also prepared on a 3-roll mill using small amounts of methylpyrrolidone as a partial replacement for the vehicle (Table 9). Samples of the grind after 2 and 4 passes were let down into a deep blending alkyd base and drawdowns made for color evaluation. Increases in tintorial strength were noted after two passes with greater improvement after 4 passes. In Figure 3 (lefthand side) the effect of methylpyrrolidone after 4 passes is graphically shown.

Table 9
HELIOGEN

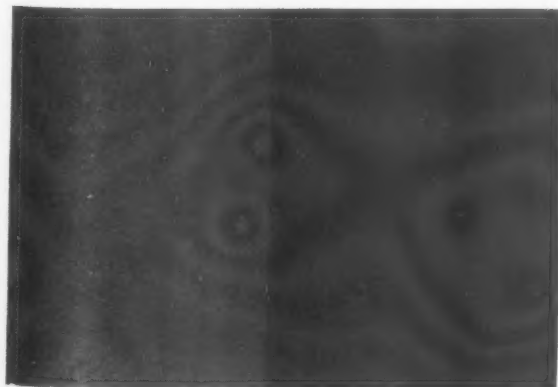
| | Blue BG | Chrome | Green |
|--------------------------------|---------|--------|-------|
| Pigment Content | 5.0 | 5.0 | 5.0 |
| Beckolin P 75 | 20.0 | 19.7 | 20.0 |
| Methylpyrrolidone | — | 0.3 | — |
| Tintorial Increase Over | | | |
| Control (1%) | — | — | — |
| 2 passes | — | +15 | +10 |
| 4 passes | — | +25 | +15 |

It may be concluded on the basis of this study that these pyrrolidones offer a number of outstanding advantages to the coatings compounder. Both methyl and vinylpyrrolidone are effective pigment dispersing aids. While the major effort has been carried out with methylpyrrolidone, vinylpyrrolidone should not be discounted since field studies have indicated that it is effective with certain oxide pigments. The data com-

(Turn to page 91)

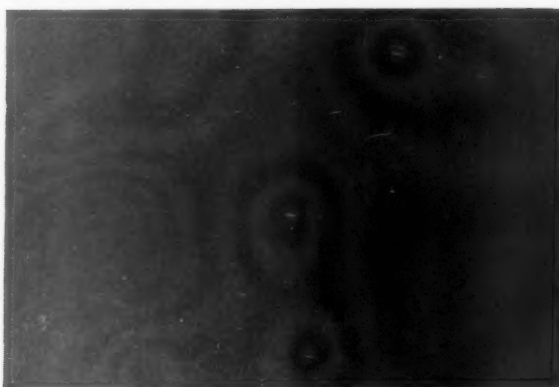
Figure 3. Methylpyrrolidone, pigment dispersing aid — 3 roll mill — ball mill.

**3-Roll Mill, 6% methyl pyrrolidone on pigment
4 passes**



Control
6% M. Pyr.
Let down in deep blending alkyd
Heliogen Blue BG

**Ball Mill 72 Hrs.
15% solvent replacement**



Control
M. Pyr.
Let down in white enamel
Miliori Blue



For high gloss and durability...fast-curing UFORMITE MM-57

Melamine-alkyd enamels bake to a brilliant, glossy finish, when the melamine-formaldehyde resin is UFORMITE MM-57. Baking enamels made with UFORMITE MM-57 also have outstanding gloss retention. They're excellent for kitchen appliances, stoves and hospital equipment subject to repeated cleaning with soaps and detergents or exposure to high temperatures. Exceptional hardness and resistance to marring and scratching are additional attractive features.

Finishes based on UFORMITE MM-57 cure rapidly, yet resist yellowing on overbaking. And in storage, enamels made with UFORMITE MM-57 show good

viscosity stability over long periods of time.

Write for complete technical notes and formulating information.

UFORMITE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.



Chemicals for Industry

**ROHM & HAAS
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

UFORMITE MM-57

Manufacturers of plastics, paints, inks —

Sun-Tested VELVA-GLO Fluorescent Pigments bring you the brilliance, lightfastness, particle size, ease of dispersion, solvent and heat resistance you need to successfully introduce fluorescent colors into your products. Try them and see for yourself.

4 types; 8 colors. Write today for technical bulletin and samples.

RADIANT COLOR CO.

830 Isabella St., Oakland 7, Calif.

461 W. Erie St., Chicago 10, Ill.

249 W. 29th St., New York 1, N. Y.



VELVA-GLO PIGMENTS



"After a million square feet of finished floors, this varnish based on

SPENKEL F78

is the Best."

JOSEPH L. GAUTHIER

Member Niagara Frontier
Builders Association

For 29 years Joseph L. Gauthier of the Gauthier Building Corporation, in Tonawanda, New York, has been a builder of fine homes. During this time he has built 800 homes and applied floor finish to approximately 1,000,000 square feet of flooring. This is what he has to say about varnish based on SPENKEL F78:



"It is easy to apply, sets up and dries fast with no lap problem; has good body and flows easily. It is light in color and gives a uniform satin lustre."

"I varnished 390 square feet of floor, with a 5" brush, in just 40 minutes. Five hours after application prospective buyers were walking on this same floor. It's much tougher than any floor finish I have ever used . . . in 29 years I have never used anything as good."

SPENCER
SK
KELLOGG

And, of course, like our other one-can stable polyurethane, SPENKEL F77, this product has excellent wear and water resistance.

SPENCER KELLOGG AND SONS, INC., Buffalo 5, N. Y.

LARGE PARTICLE HYDRATED ALUMINUM SILICATES AS FLATTING AGENTS

By
George P. Larson*

HYDRITED ALUMINUM SILICATES (KAOLINITES)

The various commercial kaolinite extenders have found wide utilization in the paint industry, and consumption of these materials continues to increase substantially. The kaolinites offer a unique combination of properties, not obtainable with other extenders. They have excellent suspension and desirable rheological properties in most paint systems. The kaolinites have a relatively high refractive index compared to other extenders, so that they confer improved hiding characteristics. They are completely inert, and are readily available at low cost. Figure 1 gives particle-size distribution of the various grades of kaolinites which are commercially available.

A further unique characteristic of the kaolinites is that they are found as separate, individual particles in the native state. In this respect they are unlike many of the other extenders, which are massive when found, and hence require grinding to develop fineness. Kaolinites require only fractionation or classification of the individual particles already existing, to control

The use of large-particle hydrated aluminum silicates (kaolinites) offers the paint industry, for the first time, a low-oil absorption flattening agent for control of gloss and sheen. By use of this inexpensive type of flattening agent, more free binder is available in a given system, which is reflected as improved enamel hold-out, lower viscosity and better scrub resistance. Further, higher loadings are possible, because of the lower binder demand, with resultant reduction in cost and improvement in hiding.

the particle size of the commercial product.

Price (1) has pointed out that kaolinite particles are of two strikingly different types. Particles in the range of 2 microns and below (equivalent spherical diameter) are thin, flat plates, of a thickness approximately one-tenth their width;

larger particles are tightly bound stacks of these plates. The stacks are highly resistant to disruptive forces, so that standard grinding techniques will not break apart or release the plates.

Price goes on to show that optical properties of paints are profoundly influenced by the relative propor-

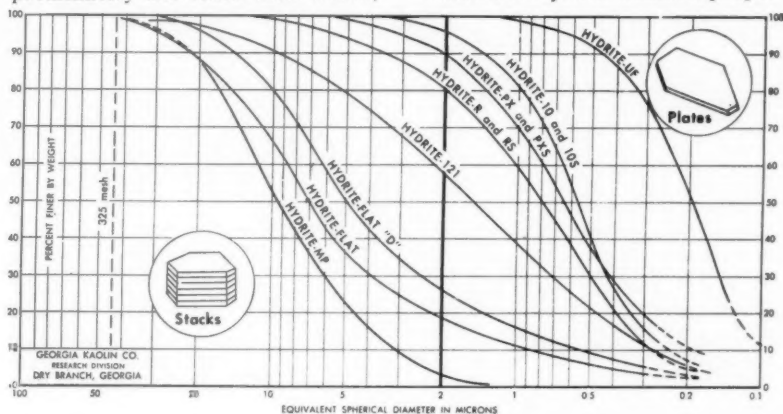


Figure 1. Particle-size distribution of commercial hydrated aluminum silicates.

*Georgia Kaolin Co., Elizabeth, N. J.

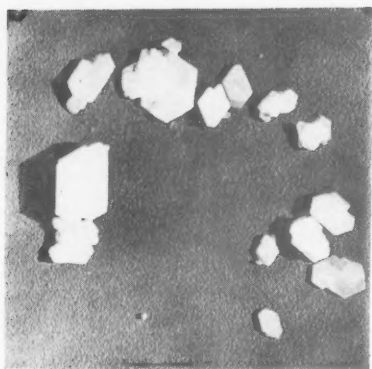


Figure 2. Electron microphotograph of a typical hydrated aluminum silicate plate formation.



Figure 3. Electron microphotograph of a side view of a typical stack formation of the hydrated aluminum silicate extender.

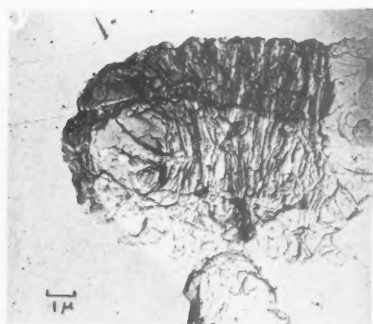


Figure 4. Electron microphotograph of the stack structure as imbedded in a substance. Note laminated, irregular surface.

tion of the two types of particle in the particular kaolinite extender used. Control of these properties by the kaolinite processor, and appropriate choice by the paint manufacturer, therefore, offer reliable control of optical properties.

The influence of particle type on optical properties, particularly gloss and sheen, is related to the surface

| | TABLE 1 | | |
|-----------------------------------|--------------|------------|-----------------------------|
| | Hydrite Flat | Hydrite MP | Typical Diatomaceous Silica |
| Average particle size (microns) | 7.0 | 9.5 | 6.8 |
| Particle size distribution | | | |
| 0 - 2 microns | 19% | 3% | 11% |
| 2 - 4 microns | 12% | 14% | 19% |
| 4 - 6 microns | 13% | 13% | 18% |
| 6 - 8 microns | 11% | 12% | 19% |
| 8 - 10 microns | 10% | 11% | 10% |
| 10 - 20 microns | 22% | 34% | 15% |
| 20 - 40 microns | 13% | 13% | 8% |
| 325 mesh residue (maximum) | 0.5 | 0.5 | 0.5 |
| Oil absorption | 27 | 32 | 90 |
| Moisture (maximum) | 1% | 1% | 1% |
| Refractive Index | 1.56 | 1.56 | 1.47 |
| Specific Gravity | 2.58 | 2.58 | 2.30 |
| Weight per solid gallon | 21.7 | 21.7 | 19.2 |

TABLE 2
ALKYD MODIFIED BUTADIENE-STYRENE EMULSION

| Ingredients | PVC | | |
|--|----------|----------|----------|
| | 45 | 55 | 65 |
| Rutile Titanium Dioxide | 200 lbs. | 200 lbs. | 200 lbs. |
| *Hydrite (Grade as indicated) | 150 | 210 | 272 |
| Tetrasodium Polyphosphate | 1.0 | 1.2 | 1.3 |
| Lecithin (water-dispersible) | 3.5 | 4.1 | 4.7 |
| Phenyl-Mercuric Acetate (30% solution) | 2.0 | 2.0 | 2.0 |
| Anti-foam Agent | 3.0 | 3.0 | 3.0 |
| Casein (15% solution) | 150 | 150 | 150 |
| Butadiene-Styrene Latex | 219 | 179 | 139 |
| Water | 341 | 364 | 383 |
| Alkyd Resin | 39 | 32 | 25 |
| Super Cobalt Drier | 1.3 | 1.0 | 0.8 |

TABLE 3
BUTADIENE-STYRENE EMULSION

| Ingredients | PVC | | |
|--|----------|----------|----------|
| | 45 | 55 | 65 |
| Rutile Titanium Dioxide | 200 lbs. | 200 lbs. | 200 lbs. |
| *Hydrite (Grade as indicated) | 150 | 210 | 272 |
| Tetrasodium Polyphosphate | 1.0 | 1.2 | 1.3 |
| Lecithin (water-dispersible) | 3.5 | 4.1 | 4.7 |
| Phenyl-Mercuric Acetate (30% solution) | 2.0 | 2.0 | 2.0 |
| Anti-foam Agent | 3.0 | 3.0 | 3.0 |
| Casein (15% solution) | 150 | 150 | 150 |
| Butadiene-Styrene Latex | 274 | 224 | 173 |
| Water | 315 | 341 | 366 |

TABLE 4
POLYVINYL-ACETATE COPOLYMER EMULSION

| Ingredients | PVC | | |
|--|----------|----------|----------|
| | 45 | 55 | 65 |
| Rutile Titanium Dioxide | 200 lbs. | 200 lbs. | 200 lbs. |
| *Hydrite (Grade as indicated) | 150 | 210 | 272 |
| Tetrasodium Pyrophosphate | 1.0 | 1.2 | 1.3 |
| Lecithin (water-dispersible) | 3.5 | 4.1 | 4.7 |
| Phenyl-Mercuric Acetate (30% solution) | 2.0 | 2.0 | 2.0 |
| Anti-foam Agent | 3.0 | 3.0 | 3.0 |
| "Methocel" (2% solution, 4000 cps) | 150 | 150 | 150 |
| Polyvinyl-Acetate Copolymer Emulsion | 264 | 216 | 167 |
| Water | 340 | 361 | 382 |

topography of the particle type. The plate-like particles are smooth, nearly plane, and tend to produce specular reflection (see Figure 2). Kaolinite stacks, on the other hand, have highly irregular surfaces, and are likely to give rise to diffuse reflection (see Figure 3).

Advantages of Kaolinite Stacks

Kaolinite stacks, because of their highly irregular surfaces, exert a pronounced flattening effect in paint films (see Figure 4). The surface irregularity of kaolinite stacks is strikingly similar to that of particles of diatomaceous silica, a

TABLE 5
ACRYLIC EMULSION

| Ingredients | PVC | | |
|--|----------|---------|----------|
| | 45 | 55 | 65 |
| Rutile Titanium Dioxide | 200 lbs. | 200 lbs | 200 lbs. |
| *Hydrite (Grade as indicated) | 150 | 210 | 272 |
| Tetrasodium Pyrophosphate | 1.0 | 1.0 | 1.0 |
| Lecithin (water-dispersible) | 3.5 | 4.1 | 4.7 |
| Phenyl-Mercuric Acetate (30% solution) | 2.0 | 2.0 | 2.0 |
| Anti-foam Agent | 1.0 | 1.0 | 1.0 |
| Casein (15% solution) | 150 | 150 | 150 |
| Acrylic Emulsion | 309 | 253 | 196 |
| Water | 287 | 318 | 347 |

TABLE 6
FILM PROPERTIES
ALKYD MODIFIED BUTADIENE-STYRENE EMULSION

| | 45 PVC | | 55 PVC | | 65 PVC | |
|------------------------------------|-----------|-----------|-----------|---------|-----------|---------|
| | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP |
| Gloss (60°) | 7 | 5 | 5 | 4 | 5 | 3 |
| Sheen (75°) | 32 | 11 | 21 | 7.0 | 21.5 | 5.0 |
| Yellowness | 0.0927 | 0.0871 | 0.1003 | 0.0831 | 0.0874 | 0.0673 |
| Contrast Ratio | 0.954 | 0.923 | 0.950 | 0.912 | 0.972 | 0.927 |
| Reflectance | 86.3 | 85.0 | 86.7 | 84.6 | 88.1 | 84.6 |
| Enamel Hold-out % | 78 | 79.8 | 58.8 | 68.4 | 50.8 | 63.5 |
| Scrubs to Failure | 5000 plus | 5000 plus | 3693 | 5963 | 1259 | 2259 |
| Stain Removal (scrubs for removal) | | | | | | |
| No. 2 pencil | 4 | 4 | 4 | 13 | 3 | 11 |
| Wax crayon | 7 | 7 | 7 | 17 | 4 | 20 |
| Synthetic dirt | 10 | 10 | 10 | 35 | 6 | 25 |
| Viscosity KU | 70 | 68 | 76 | 68 | 76 | 68 |

TABLE 7
FILM PROPERTIES
BUTADIENE-STYRENE EMULSION

| | 45 PVC | | 55 PVC | | 65 PVC | |
|--|-----------|---------|-----------|---------|-----------|---------|
| | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP |
| Gloss (60°) | 10 | 6.5 | 6 | 4 | 5 | 3 |
| Sheen (75°) | 40 | 15 | 28 | 7 | 25 | 5 |
| Yellowness | 0.0659 | 0.0474 | 0.0812 | 0.0629 | 0.0758 | 0.0680 |
| Contrast Ratio | 0.944 | 0.880 | 0.962 | 0.892 | 0.979 | 0.904 |
| Reflectance | 88.0 | 86.4 | 86.2 | 85.8 | 89.6 | 85.3 |
| Enamel Hold-out % | 79.4 | 87.4 | 79.4 | 76.4 | 63.6 | 82.5 |
| Scrubs to Failure | 1116 | 1300 | 1529 | 2562 | 960 | 2447 |
| Stain Removal (scrubs to remove stain) | | | | | | |
| No. 2 pencil | 30 | 21 | 14 | 13 | 7 | 7 |
| Wax Crayon | 25 | 19 | 23 | 25 | 10 | 35 |
| Synthetic dirt | 25 | 11 | 6 | 10 | 4 | 10 |
| Burnishing | | | | | | |
| (% Gloss Increase) | 20 | 16.7 | 35 | 33.3 | 70 | 60 |
| Viscosity KU | 62 | 61 | 62 | 61 | 62 | 62 |

TABLE 8
FILM PROPERTIES
POLYVINYL-ACETATE COPOLYMER EMULSION

| | 45 PVC | | 55 PVC | | 65 PVC | |
|-------------------|-----------|---------|-----------|---------|-----------|---------|
| | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP |
| Gloss (60°) | 5.5 | 5 | 5 | 4 | 5 | 3.5 |
| Sheen (75°) | 28.5 | 13.0 | 26.5 | 8.0 | 27.0 | 6.0 |
| Yellowness | 0.0557 | 0.0452 | 0.0596 | 0.0599 | 0.0663 | 0.0646 |
| Contrast Ratio | 0.916 | 0.926 | 0.984 | 0.955 | 0.993 | 0.965 |
| Reflectance | 89.7 | 88.6 | 90.6 | 88.0 | 90.5 | 88.3 |
| Enamel Hold-out % | 35.7 | 55.6 | 17.5 | 34.9 | 23.0 | 30.2 |
| Scrubs to Failure | 200 | 362 | 40 | 91 | 31 | 57 |
| Stain Removal | | | | | | |
| No. 2 pencil | 6 | 7 | 7 | 7 | 5 | 5 |
| Wax crayon | 18 | 20 | 11 | 55 | 9 | 25 |
| Synthetic dirt | 17 | 12 | 10 | 12 | 7 | 18 |
| Viscosity KU | 72 | 68 | 76 | 68 | 76 | 69 |

standard flattening agent for many years. As might be expected from the surface similarity, kaolinite stacks are very nearly as effective, in producing and controlling flatness of paint film, as is the diatomaceous silica.

Preparation of a commercial kaolinite comprising only stack-type particles, free from plates, has only recently become possible. The required sharp, clean separation is difficult to accomplish. Until practical methods for this separation were developed, the nearest approach to an all-stack kaolinite was Hydrite Flat, which is only 80% stacks, still carrying 20% plate particles.

Plate-Free Commercial Kaolinite

The first commercial all-stack kaolinite, virtually free from plate formations, is Hydrite MP, now available from Georgia Kaolin Company. With plate-fraction content reduced to approximately 3%, Hydrite MP has an effect on paint films strikingly different from that of Hydrite Flat. Hydrite MP has a high flattening efficiency, close to that of the diatomaceous silicas, but retains the low oil absorption of a large particle kaolinite. Table I compares the physical characteristics of Hydrite Flat, Hydrite MP and a typical diatomaceous silica.

Practical demonstration of the benefit conferred by our all-stack kaolinite, such as Hydrite MP, is offered by the excellent performance characteristics of the experimental formulations reported hereunder.

EMULSION PAINT SYSTEMS

Emulsion paint systems using Hydrite Flat and Hydrite MP were made in four basic types of emulsions: alkyd-modified butadiene-styrene, unmodified butadiene-styrene, polyvinyl-acetate copolymer and acrylic. These emulsions were made at three PVC levels. A single extender was used, since it was desirable to evaluate the effects of Hydrite MP without the complication of multiple extender pigments. Exact formulations are shown in tables 2, 3, 4 and 5. Tables 6, 7, 8 and 9 summarize the results on the film properties which are induced by the elimination of the 20% plate formation.

In all of the emulsions tested, the most startling effects were obtained with sheen and gloss. These are given in Figures 5, 6, 7 and 8. It will be noted that in all of the emulsions, elimination of the 20% of plates results in a great reduction of sheen and gloss. This indicated that the Hydrite MP has an extremely high flattening efficiency compared to Hydrite Flat. It would appear that the Hydrite MP could be very efficiently used as a flattening agent in other systems. To test out its flattening efficiency, Hydrite MP was compared to the other widely accepted sheen control agent, diatomaceous silica. This was done in several alkyd flat systems which are discussed below.

ALKYD FLAT PAINT SYSTEMS

Because of its unique particle characteristics, Hydrite MP can provide an extender pigment which will give exceptionally good control of gloss and sheen. Since the Hydrite MP has a lower oil demand than other control agents, such as diatomaceous silica, this can provide improved film integrity, lower viscosity and improved color uniformity.

Initial tests were made in a formulation given in table 10. In the first formulation a control was made using diatomaceous silica at one half pound per gallon and calcium carbonate as the extender. In the second formulation the diatomaceous silica was replaced with an equal volume of Hydrite MP. For the third formulation Hydrite MP was used to replace all the extenders. A summary of the results obtained with these formulations are shown in Table 11.

As can be observed from these values, the Hydrite MP when used as a flattening agent had no significant effect on the optical properties. However, when the Hydrite MP was used as the sole extender, yellowness was slightly higher and reflectance was slightly lower. When Hydrite MP was used to replace the diatomaceous silica, on an equal volume basis, there was a considerable improvement in film integrity with an increase in the free binder available. This is noted by an increase in enamel hold-out and reduction in viscosity at constant PVC's. Color uniformity and tint of paints over surfaces

TABLE 9
FILM PROPERTIES
ACRYLIC EMULSION

| | 45 PVC | | 55 PVC | | 65 PVC | |
|-------------------|-----------|---------|-----------|---------|-----------|---------|
| | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP | Hyd. Flat | Hyd. MP |
| Gloss (60°) | 10.5 | 5.0 | 7 | 5 | 6 | 4 |
| Sheen (75°) | 39.0 | 12.0 | 28.0 | 11.0 | 34.0 | 8.0 |
| Yellowness | 0.0661 | 0.04831 | 0.0839 | 0.0612 | 0.0837 | 0.0762 |
| Contrast Ratio | 0.948 | 0.944 | 0.946 | 0.934 | 0.973 | 0.939 |
| Reflectance | 87.8 | 87.0 | 87.0 | 86.7 | 88.3 | 86.7 |
| Enamel Hold-out % | 100 | 100 | 100 | 100 | 65 | 100 |
| Scrubs to Failure | 590 | 567 | 760 | 663 | 224 | 260 |
| Stain Removal | | | | | | |
| No. 2 pencil | 4 | 10 | 10 | 8 | 5 | 6 |
| Wax crayon | 25 | 29 | 31 | 27 | 22 | 23 |
| Synthetic dirt | 3 | 7 | 5 | 5 | 9 | 12 |
| Viscosity KU | 66 | 65 | 66 | 65 | 66 | 66 |

TABLE 10
ALKYD FLAT FORMULATION
CALCIUM CARBONATE EXTENDED

| | Control | HYDRITE MP As Flattening Agent | HYDRITE MP As Total Extender |
|----------------------------|----------|-----------------------------------|---------------------------------|
| Rutile Titanium Dioxide | 186 lbs. | 186 lbs. | 186 lbs. |
| HYDRITE MP | | 56 | 448 |
| Calcium Carbonate | 406 | 406 | — |
| Diatomaceous Silica | 50 | — | — |
| Aluminum Stearate | 3.2 | 3.2 | 3.2 |
| Alkyd Vehicle (30% solids) | 377 | 377 | 377 |
| 24% Lead Napthenate | 1.9 | 1.9 | 1.9 |
| 6% Cobalt Napthenate | 0.76 | 0.76 | 0.76 |
| Mineral Spirits | 141 | 141 | 141 |
| Anti-skinning Agent | 1.0 | 1.0 | 1.0 |

TABLE 11
FILM PROPERTIES ALKYD FLAT FORMULATION (SEE TABLE 10)
(CALCIUM CARBONATE EXTENDED)

| | Control | HYDRITE MP As Flattening Agent | HYDRITE MP As Total Extender |
|-------------------------------|---------|-----------------------------------|---------------------------------|
| Viscosity | 95 | 83 | 72 |
| Reflectance | 86.6 | 87.0 | 84.3 |
| Contrast Ratio | 0.962 | 0.964 | 0.969 |
| Yellowness | 0.0693 | 0.0644 | 0.1091 |
| Gloss (60°) | 3 | 3 | 3 |
| Sheen (75°) | 3 | 3 | 3 |
| Enamel Hold-out % | 68.4 | 73.5 | 59.6 |
| Color Uniformity | | | |
| Reflectance over-Gypsum Board | 56.9 | 53.0 | 50.1 |
| Casein Paint | 56.9 | 53.0 | 50.1 |
| Alkyd Flat Paint | 56.9 | 52.9 | 50.1 |
| Semi-gloss Paint | 56.7 | 53.0 | 50.0 |
| Gloss Paint | 56.7 | 53.0 | 50.0 |

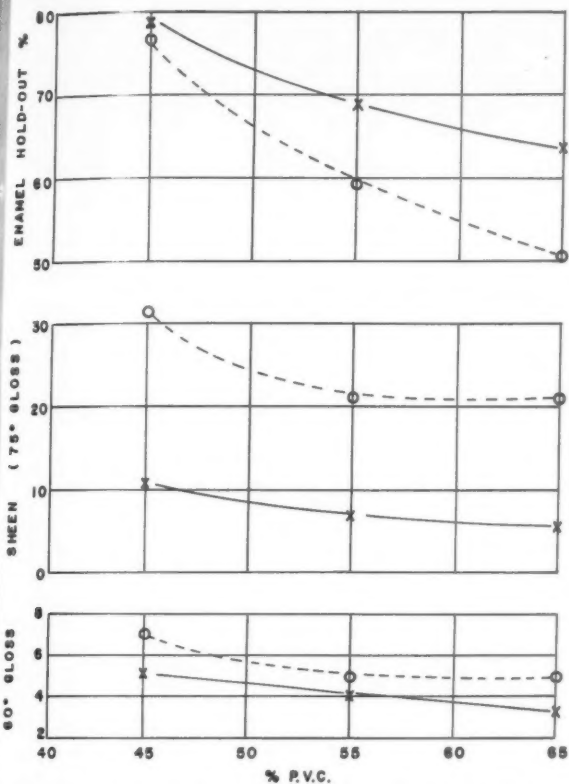
TABLE 12
ALKYD FLAT FORMULATION
(CALCIUM SULFATE EXTENDED)

| | Control | HYDRITE MP As Flattening Agent |
|----------------------------|----------|-----------------------------------|
| Titanium-calcium Pigment | 610 lbs. | 610 lbs. |
| Calcium Carbonate | 50 | 50 |
| HYDRITE MP | 50 | — |
| Diatomaceous Silica | — | 56 |
| Alkyd Vehicle (30% solids) | 566 | 566 |
| 24% Lead Napthenate | 2.5 | 2.5 |
| 6% Cobalt Napthenate | 1.2 | 1.2 |
| Mineral Spirits | 125 | 125 |
| Anti-skinning Agent | 0.5 | 0.5 |

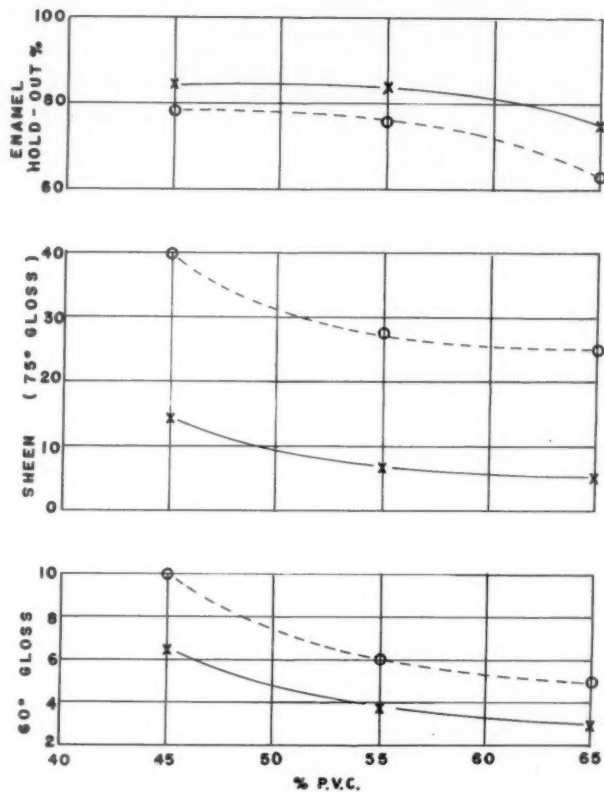
VC
Hyd.
MP
4
8.0
0.0762
0.939
36.7
100
60
6
3
2
6
E MP
tal
der
os.

6
10)
E MP
al
er
1

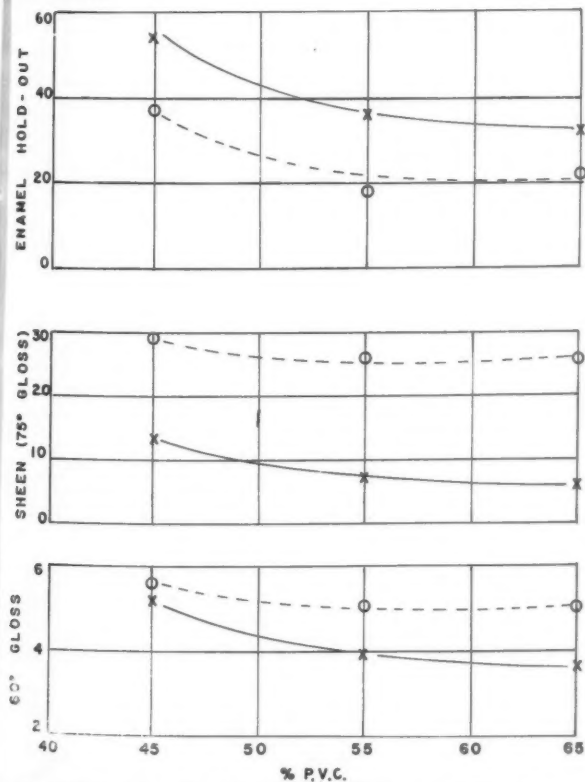
MP
g



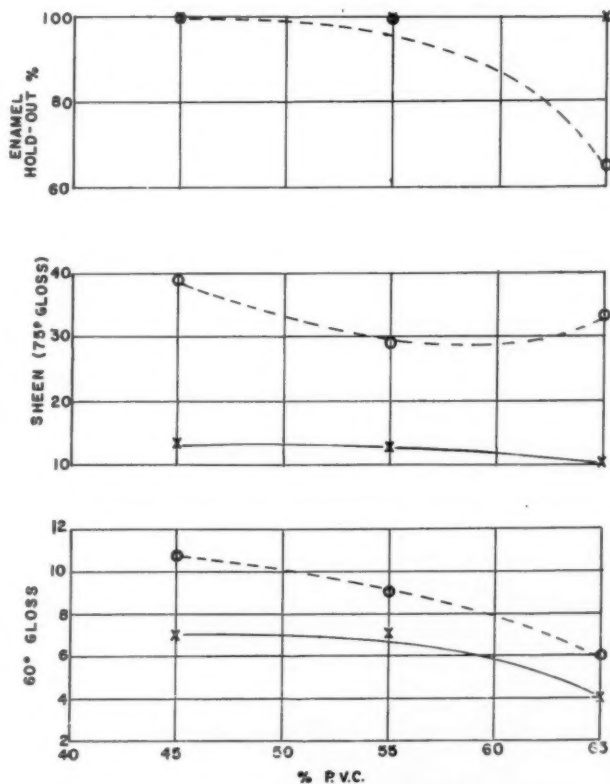
X-Hydrite MP 0% Plates. O-Hydrite Flat 20% Plates. Figure 5. Effect of 20% plates on the optical and film properties of a typical alkyd-modified-butadiene-styrene emulsion.



X-Hydrite MP 0% Plates. O-Hydrite Flat 20% Plates. Figure 6. Effect of 20% plates on the optical and film properties of a typical butadiene-styrene emulsion.



X-Hydrite MP 0% Plates. O-Hydrite Flat 20% Plates. Figure 7. Effect of 20% plates on the optical and film properties of a typical polyvinyl acetate copolymer emulsion.



X-Hydrite MP 0% Plates. O-Hydrite Flat 20% Plates. Figure 8. Effect of 20% plates on the optical and film properties of a typical acrylic emulsion.

TABLE 13
ALKYD FLAT FORMULATION
(CALCINED CLAY EXTENDED)

| | Control | HYDRITE MP As Flatting Agent |
|----------------------------|---------|------------------------------------|
| Rutile Titanium Dioxide | 150 | 150 |
| GLOMAX HE | 147 | 147 |
| Calcium Carbonate | 440 | 400 |
| HYDRITE MP | — | 56 |
| Diatomaceous Silica | 50 | — |
| Thixcin (R) | 4 | 4 |
| Lecithin | 4 | 4 |
| Alkyd Vehicle (30% solids) | 400 | 400 |
| 24% Lead Napthenate | 1.5 | 1.5 |
| 6% Cobalt Napthenate | 0.6 | 0.6 |
| Mineral Spirits | 155 | 155 |
| Anti-skinning Agent | 1.0 | 1.0 |

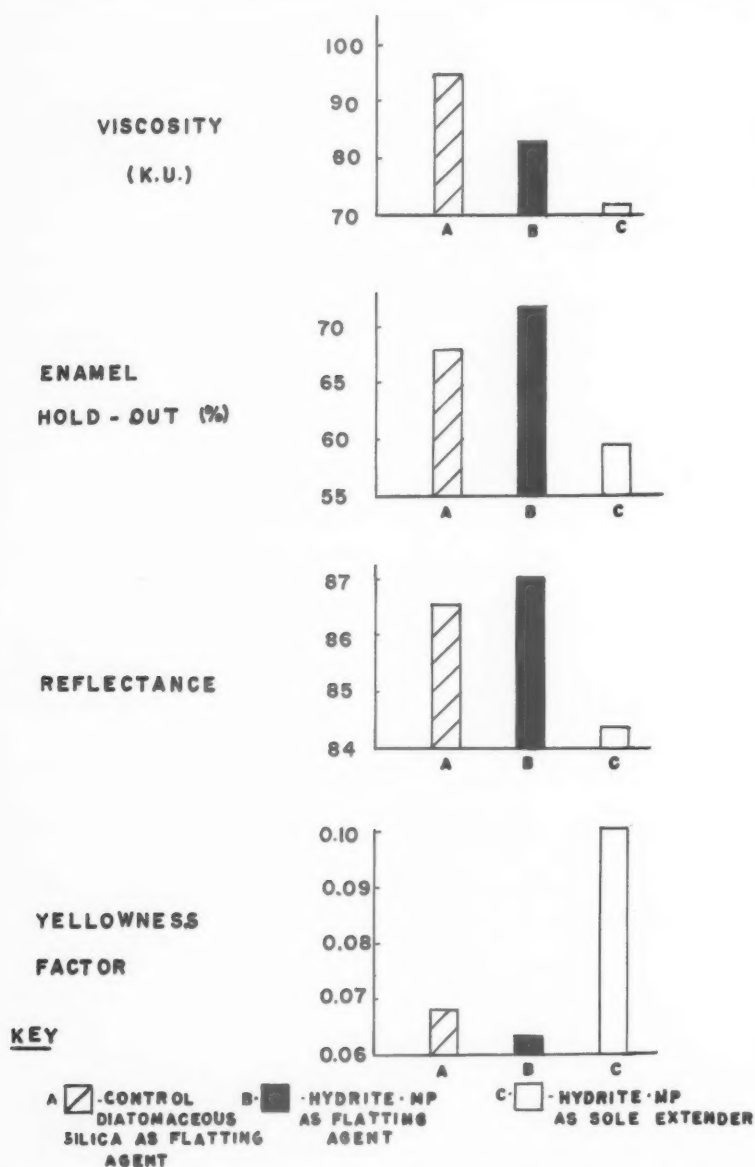


Figure 9. Effect of Hydrite MP as flatting agent and sole extender in a typical calcium carbonate extended alkyd flat.

of varying porosity were improved by the use of Hydrite MP in this system. Several other film properties, such as scrubability and burnishing, were also improved by the use of Hydrite MP as a replacement for diatomaceous silica. These are shown graphically in Figure 9.

Two other types of formulations were tested where the Hydrite MP was used to replace the diatomaceous silica as the flatting agent. They are given in table 12 for a calcium titanium extended alkyd flat formulation and table 13 for a calcined clay extended calcium carbonate alkyd flat formulation. Summaries of the film properties which were obtained from these formulations are given in tables 14 and 15 respectively. As can be seen from these tables the effect of Hydrite MP is substantially the same as with the other formulations. However, when the calcium titanium pigment is used, it appears necessary to increase the concentration of the Hydrite MP slightly to achieve comparable sheen.

Conclusion

With the introduction of Hydrite MP, the Georgia Kaolin Company has provided the paint industry with a sharply-fractionated hydrated aluminum silicate extender pigment, unique in that it contains essentially 100% of the stack formation and none of the plate formation. This structure offers numerous possibilities in paint formulations never before available.

In alkyd flat systems the Hydrite MP provided an efficient flatting agent when used as a replacement for diatomaceous silica. Since the Hydrite MP has much lower oil demand than diatomaceous silica, this allows lower viscosity and permits more free binder at equal sheen which gives better film integrity at lower cost, in addition the PVC can be raised by removal of vehicle so that higher loadings at lower cost with equal film properties are possible.

In emulsion paint systems, the Hydrite MP offers a very high flatting extender even at low PVC's. In addition, the Hydrite MP appears to have lower binder demand

(Turn to page 90)

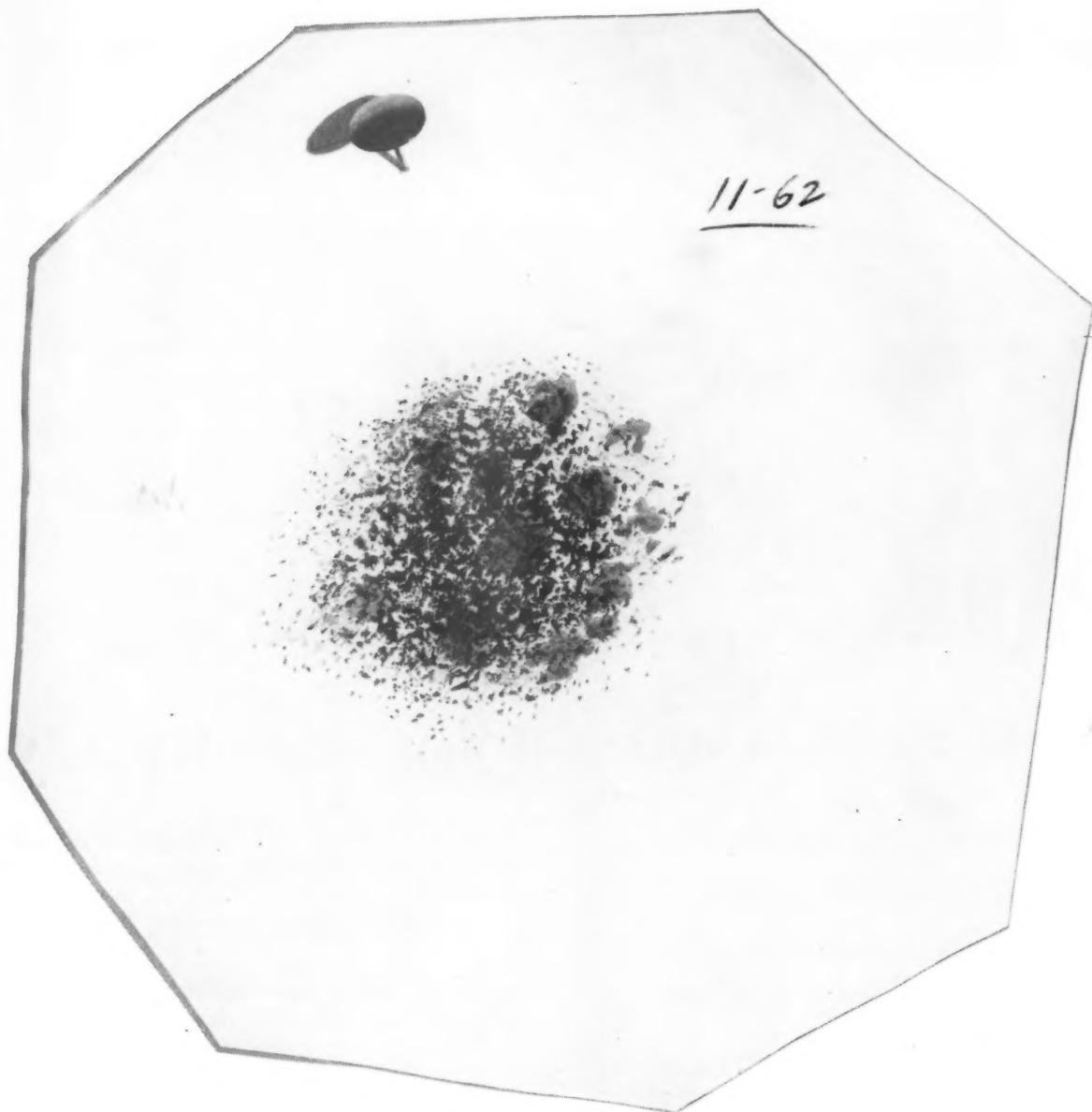
improved
in this
proper-
ty and
improved
P as a
ous sili-
hically

ulations
ite MP
atoma-
agent.
2 for a
alkyd
3 for a
alcium
lation.
erties
these
tables
can be
effect
ntially
ormu-
e cal-
sed, it
se the
e MP
rable

Hy-
kaolin
paint
ction-
licate
that
% of
of the
cture
s in
efore

Hy-
flat-
lace-
Since
ower
eous
osity
r at
etter
, in
d by
gher
qual

the
high
C's.
ap-
and




SCIENTIFIC... sort of!

Above: a hunk of wet blotting paper on which was tossed a sample of a by-product pigment. Result: it reveals the *highly unwanted* presence of metallic iron. How can you avoid the hazards of by-product pigments . . . be positive that the pigments you use contain no metallic iron or any other unknown and variable contaminants? Just specify Mapico pure synthetic iron oxides. Mapico offers many other vital advantages . . . including permanence, high hiding power, good suspension, UV screening and absolute uniformity. Get all the facts. Write to



MAPICO IRON OXIDES UNIT
COLUMBIAN CARBON COMPANY

380 Madison Avenue, New York 17, N. Y.



MELETEX

WATER DISPERSED DRIERS FOR WATER DISPERSED PAINTS

INCREASED SCRUB RESISTANCE OF
DRIED FINISHES • INCREASED HARDNESS
IMPROVED RESISTANCE TO WATER
SPOTTING • IMPROVED RESISTANCE
TO MINERAL SPIRITS • IMPROVED
GLOSS AND COLOR RETENTION OF
BAKED FINISHES • IMPROVED TRANS-
PARENCY OF CLEAR FILMS • FREE-
DOM FROM PINHOLING AND PITTING

Harshaw MELETEX DRIERS are the first pre-dispersed driers ready for immediate use. They contain no volatile solvents.

Meletex driers are designed specifically for use in all latex and pigment dispersion systems. These ready-to-use products contain finely divided metal naphthenates in water, and are pre-dispersed. Only simple mixing is required for thorough incorporation with the finished paint. Meletex driers can be added at any stage of manufacture. Meletex driers are highly dispersed—the particle size is of the same order as latexes (about 1 micron).

Meletex driers are available in the following metals: Cobalt 5%, Lead 20%, and Manganese 5%.

Write for Meletex folder furnishing complete information.



THE HARSHAW CHEMICAL CO.
1945 East 97th Street • Cleveland 6, Ohio

Chicago 32, Ill. • Cincinnati 13, Ohio • Cleveland 6, Ohio
Detroit 28, Mich. • Hastings-On-Hudson 6, N.Y. • Houston 11, Texas
Los Angeles 22, Calif. • Philadelphia 48, Pa. • Pittsburgh 22, Pa.



By
Edward Anthony

The author expresses his random reflections on various aspects of the paint industry. The opinions contained in this column are his alone and do not necessarily reflect those of this publication.

Costly Corrosion

MOST of us accept the smaller problems of life with stoic and, for the most part, uncomplaining courage. In this classification, could be considered such trivia as paying an extra penny of sales tax when the calculated amount is less than half a cent, or getting socked two dollars as penalty for over drawing your checking account by 50 cents, or Women's Page editors who place the diet column right next to pictures of scrumptious whipped cream cakes.

But corrosion is a different story. A good portion of paint sales goes toward protecting metals from the ravaging effect of their environment. In fact the corrosion of iron costs the United States a fantastic \$6 billion each year! According to a report in *Chemical and Engineering News* (August 8, 1960), two Westinghouse Research scientists, Dr. E. A. Gulbransen and T. P. Copan, have presented findings which indicate that protons may be the main cause of this havoc.

Quoting from the article: "They theorize that the protons penetrate the iron and enlarge the sites at which oxygen normally combines

with the metal, thus spreading the reaction throughout the surface. . . . though the classical electrochemical reactions may still be going on, the proton effect is more fundamental. They removed the conditions under which the electrochemical reactions occur, found that oxidation of pure iron, followed under an electron microscope, proceeds differently in dry and moist atmospheres."

In a moist oxygen atmosphere, platelets of oxide erupt which represent 250 times as much corrosion as the "whiskers" which grow in dry conditions. The two investigators will next attempt to inhibit this growth by developing iron alloys.

The results of such experimentation as this might suggest to our industry further (and better) methods of inhibiting corrosion, through the use of paint in its function as a protective coating. The traditional approaches would probably have to be supplemented by new formulative techniques if this theory should prove valid. Corrosion resistant coatings for use over metal substrates are more akin to industrial finishes than house paints, in that the latter literally "breathe"

by virtue of their high water vapor permeability, while the former ideally present an impervious barrier to outside forces.

There are some extensively tested formulative approaches for minimizing corrosion, such as the incorporation of chromate salts of low water solubility for their effect on electrochemical reactions, as a rust inhibitive pigment component. The use of a relatively large concentration of zinc dust as a so-called *sacrificial* pigment (based on its position with respect to iron in the electromotive series) is believed to be beneficial. A third method through the pigment portion is the use of red lead, particularly with linseed oil, as a rust inhibitor.

The role played by the vehicle component is also important. The influence of the degree of adhesion, wettability, and impermeability—all highly dependent on the resinous binder—would seem to be related to the new proton theory. The fact that the newer polymers such as the epoxies, urethanes, vinyls, and acrylics are apparently highly effective barriers is an indication that these three factors cannot be underestimated.

It seems to be true that, though supplementary theories may be advanced, the pronounced success of formulative approaches based on the classical description of corrosion and corrosion inhibition, indicate the importance of this explanation. But since the large research efforts along this line have resulted in only partially solving the problem it is also obvious that a new theory should receive attention.

Surface Molecules

WHILE the prevention of corrosion is in a large measure a function of activity at the film-substrate interface, the disproportionate importance of the outer surface of a paint coating is well known. This top layer not only is the foremost barrier to the destructive forces of nature (and little children), but is, from a sales viewpoint, quite crucial. This is what the ultimate consumer sees. He is really not particularly interested in the remarkable properties our industry has built into these thousandths-of-an-inch thick

films. Rather, it is the immediate visual impression upon which depends the appeal, not only of the paint, but more often than not of the whole finished product. Be it a bobby-pin or a bridge, a car or a complete community, it is this esthetic impact which assumes paramount importance over any other consideration.

So it is with great enthusiasm that I observed recorded in the *Official Digest* recently (August, 1960), an article that presents a method for analyzing the surface of a paint film. The technique described by duPont's W. T. M. Johnson in "The Chemical Nature of Paint Film Surfaces," could be a notable forward stride.

Much of the performance quality of a paint depends on the surface: "A method has been discovered for the analysis of the surface layers of paint films. This method allows determination of the chemical composition of the upper 50 angstroms (estimated) of film surface." The recent publication of the article precludes a detailed description of the technique and findings. Suffice it to say that the results were, as expected, quite unexpected!

Imagine applying such a method to progressively aged house paints (both latex and oil-based, of course); to the determination of the relative spewing characteristics of waxes in baking enamels; to the problem of "haze" in pigmented baked alkyd-amine formulations. What depths of true information, might be revealed, rather than depending on suppositions, for a thousand problems!

As Mr. Johnson points out, "The surface of a paint film may be defined as the upper 10A of film material. This is about a single molecular layer; this is the surface. . . . This method apparently allows us to approach rather closely, if not actually reach, true surface analysis. It is estimated that we analyze about 25-50A of surface, and the qualitative nature of the results supports the idea that we are analyzing surfaces; the surfaces determined are markedly different from the total film compositions."

Read this article; it is a *must*!

Facts and Figures

The story of industrial growth in this country is a fascinating record of achievement. *Chemical and Engineering News* (Sept. 5, 1960), again records the statistical side of the rapidly expanding chemicals portion in "Facts and Figures for the Chemical Process Industries." Our division, trade sales and industrial paints, will contribute close to \$2 billion of the total chemical industry sales of about \$28 billion.

How does the finishes business compare on some salient points? Whereas the production index for all industry has risen from 65 in 1947 to 110 (est.) in 1960 (based on 1957 as 100), chemical and allied products have jumped from 45 to 120, but paints only from 83 to 107. Over this period of time dollar sales of paint, varnish and lacquer have increased about 50% to their present level, but that of the whole chemical industry by over 100%. Concurrently the wholesale price index for prepared paint has jumped about 30%, that of chemicals and allied products is up 10%, and that of all commodities is higher by 20%.

Another indicative measuring stick is the diminution of the value of exports from about \$29 million in 1947 for lacquers and ready-mixed paints to about \$6 million in 1959. Over this period of time total chemicals exports were doubling.

Balancing this unimpressive recital is the presentation of Dr. M. H. Bigelow (*Chemical Processing*, June 1960), which approaches the data from another, and somewhat brighter, viewpoint. Thus, per capita consumption of paint rose from three gallons in '49 to 4.2 gallons in '59, and will go to a projected 4.5 in '65. Also, the gross national product grew at the rate of 3.6%, compounded annually, between 1948 (\$290 billion) and 1958 (\$407 billion); paint gallonage grew at virtually the same rate, 3.4%. Forecasting a conservative GNP of \$525 billion five years hence, Dr. Bigelow believes that while trade sales gallonage should reach 430 millions based on the same growth rate, industrial finishes will be off by some ten per cent, resulting in a somewhat sluggish comparison with the overall

growth rate. The inroads of plastics is considered to be largely responsible for this trend.

Venetian Gray

THE wire services recently carried a story datelined *Venice, California*, and the unique twist to an old problem that was described could only happen in this section of the Los Angeles area famed for its beatniks. True to its namesake, a canal runs through the town, but like a typical southland waterway it is usually dry! It seems that water did seep through flood gates, creating some pools of stagnant water. In the descriptive words of the news item, "Organic matter that had collected in the canal and bacteria carried by the new inflow percolated in the warm weather, generating a vile gas that attacked lead-base paint on nearby homes," discoloring the finish. Subsequent investigation singled out the culprit as hydrogen sulfide gas, an old enemy of house paint. This story of tattle-tale gray sent me back four years to the excellent report of the Pittsburgh Production Club (*Off. Dig.*, Nov. 1956), on this subject, "Blackening Effect of Hydrogen Sulfide on Exterior White House Paints."

Among the conclusions, based on extensive testing in a specially constructed exposure chamber, were that no blackening occurs with H_2S present in the atmosphere, unless lead pigments are used in the paint; lead naphthenate drier in an otherwise lead-free paint does not induce blackening; practically no blackening occurs unless the paint film is wet with water, regardless of the humidity; development of the blackening is considerably delayed if the paint film is glossy and unweathered, thus high P-V-C systems darken more readily since less protective vehicle is present.

It is certainly annoying to realize the gray eye our industry receives from such an occurrence. Without discussing the relative merits of the types of house paint commonly used, if there is any chance that hydrogen sulfide gas is an air pollutant, the fume-proof type of coating should obviously be sold.

P.S. The canal was flushed with fresh sea water to cleanse it, thus pouring soothing water on troubled citizens.

of plas-
largely

ly car-
Venice,
twist to
scribed
section
med for
nesake,
town,
water-
seems
h flood
of stag-
riptive
rganic
in the
by the
warm
as that
nearby
a. Sub-
d out
sulfide
paint.
y sent
cellent
roduc-
(1956),
Effect
terior

based
cially
, were
with
phere,
ed in
drier
paint
prac-
less
water,
de-
g is
paint
ered,
rken
ective

alize
eives
hout
of the
only
that
air
e of
sold.
shed
e it,
on

SOLVENT POWER *and Savings, too!*

Highest toluene dilution ratio

with *National* **NADONE**[®]
(CYCLOHEXANONE)

One of the most powerful solvents available at a volume-production price, NADONE Cyclohexanone can cut the overall cost of solvent systems for organic coatings.

The addition of a small percentage of NADONE permits an increase in the volume of diluent that can be successfully incorporated in the solvent system. In nitrocellulose lacquers, for instance, NADONE solutions have a 6.3 toluene dilution ratio. Comparably high ratios obtain for other resins and diluents.

Conversely, NADONE solvent power makes possible higher solids content in resin-solution formulations. An added advantage: Inclusion of NADONE prevents separation of resins and oils in solution and during evaporation of solvent from the film.

*U.S. Patent 2,389,608

Other interesting, cost-saving uses of NADONE are:

- As a detergent-additive in lube oils to minimize carbon and sludge formation.*
- To improve fractional solvent extractions.
- As a degreasing solvent or fortifier for lower-power degreasers.
- To make better paint removers, inks, adhesives, pesticides, etc., etc.

WRITE FOR TECHNICAL BULLETIN 1-19F

This 32-page bulletin gives details on these and other applications of NADONE, contains complete properties, reactions and a valuable list of 148 literature references. We'll gladly send you a copy of this bulletin and, if you wish, a liberal working sample of NADONE for your investigations.

NATIONAL ANILINE DIVISION

40 RECTOR STREET, NEW YORK 6, N. Y.

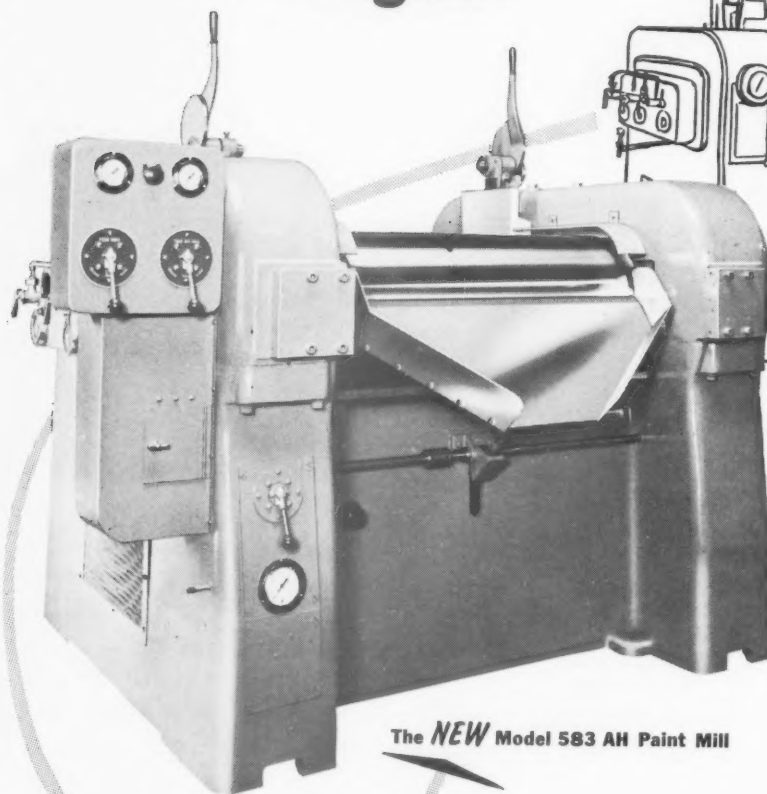
Atlanta Boston Charlotte Chicago Greensboro Los Angeles
Philadelphia Portland, Ore Providence San Francisco

In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 18

Distributors throughout the world. For information:
ALLIED CHEMICAL INTERNATIONAL • 40 Rector St., New York 6, N. Y.

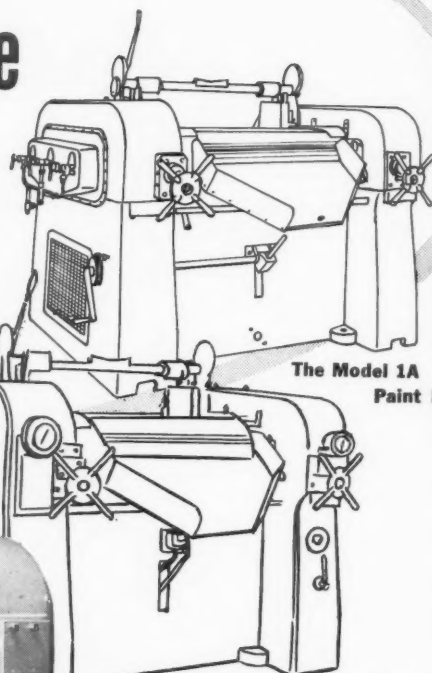


LEHMANN sets the pace in PAINT MILLS —again!



The **NEW** Model 583 AH Paint Mill

Available in horizontal design as shown, or with vertical roller arrangement.



The Model 1A
Paint Mill

The Model 661 V Paint Mill

LEHMANN Paint Mill engineering has created at least three important break-throughs in paint making technology. First was the introduction about thirty years ago of the Lehmann Model 1A, the first modern mechanized paint mill. The second was the development about 12 years ago of the Model 661 V—first of the Sight-O-Matic type of mill.

Now Lehmann offers the new Model 583 AH, a completely hydraulically controlled paint mill of the newest design. In this the control points have been reduced from four to two. Adjustments are made by pressing a mushroom type button. The center roll is fixed, only the two outer rolls being movable to adjust pressures. A flick of a valve handle activates the Float-O-Matic feature introduced by Lehmann some years ago.

As each of the three Lehmann Paint Mill models mentioned has been introduced it has been unsurpassed for production among all mills previously designed. Each has been notable for increasing the mechanization and reducing the human element in this type of equipment.

Ask us for complete information regarding our new Model 583 AH Paint Mill
— the newest machine for reducing paint making costs.



J. M. LEHMANN COMPANY, Inc.

COAST-TO-COAST SERVICE

Moore Dry Deck Company
Oakland, California

Lammert & Mann Co.
Chicago 12, Illinois

J. M. Lehmann Co., Inc.
Lyndhurst, New Jersey

MIH

y has
rtant
tech-
ction
mann
echa-
was
ago
the

odel
cally
west
oints
two.
ng a
nter
rolls
ures.
ates
uced

een
isly
and

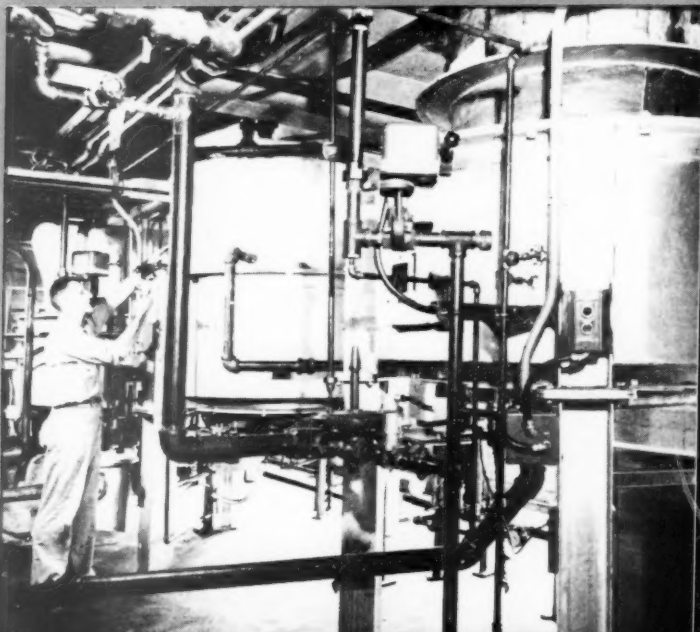
PRODUCTION

PACKAGING

MATERIAL
HANDLING

NEW EQUIPMENT
and MATERIALS

Operator taking varnish sample from batch to be checked by control laboratory for specification requirements. Duradiant-burner-fired enclosed settings are used in processing this varnish. For details, see page 57.



The Case of The

LUCKY LAWSUIT

IS
SOMETHING
WRONG,
MR. SMITH?

PLENTY! SOME OF THE SOLVENTS
I'VE BEEN BUYING HAVE BEEN
CONTAMINATED! IF THIS KEEPS
UP, WE MAY BE SUED!

I WONDER IF THE
PROBLEM COULD BE
THAT THE SOLVENT DID
NOT COME DIRECT
FROM THE REFINERY.

PURCHASING AGENT

WAIT A MINUTE! THAT AD I READ...

GET ME THE
SKELLYSOLVE
PEOPLE IN
KANSAS CITY

SKELLYSOLVE SHIPMENTS ARE MADE
DIRECT FROM OUR REFINERY AND THERE'S
NO CHANCE OF CONTAMINATION.

... SKELLYSOLVE PUMPS,
LOADING LINES, STORAGE
TANKS AND TANK CARS
ARE USED **ONLY**
FOR SKELLYSOLVE!

... AND 9 OUT OF 10 CARS OF
SKELLYSOLVE ARE SHIPPED THE DAY
AFTER THE ORDER IS RECEIVED?

GREAT!
SHIP US A TANK CAR
RIGHT NOW!

MINUTES LATER

HERE'S A WIRE
FROM ACME,
MR. SMITH!

TELEGRAM

TELEGRAM

MANY THANKS FOR PROMPT,
TOP QUALITY DELIVERIES.
DOUBLE NEXT MONTH'S
ORDER
ACME COMPANY

GOLLY! THAT NEAR LAWSUIT
TURNED OUT LUCKY FOR YOU!

IT SURE DID!

THANKS TO
SKELLYSOLVE!

Many companies in your industry depend on
Skellysolve for exacting quality, prompt shipment,

and uncontaminated products. For complete facts
contact us at LOgan 1-3575, Kansas City, Mo.

Skellysolve for Paint, Varnish and Lacquer Manufacture

SKELLYSOLVE-L. A quick-evaporating
lacquer diluent of exceptionally sweet
odor. Closed cup flash point about
12° F.

SKELLYSOLVE-S. Low end point mineral
spirits for thinning paints, varnishes,
and polishes. Closed cup flash point
about 103° F.

SKELLYSOLVE-S2. A quick-evaporating
mineral spirits. Closed cup flash point
about 101° F. Excellent for industrial
paints and for polishes and waxes.

SKELLYSOLVE-V. Narrow boiling range
V.M.&P. naphtha. Excellent for dip and

spray enamels. Closed cup flash point
about 50° F.

SKELLYSOLVE-T. High boiling mineral
spirits for longer, wet edge. Closed cup
flash point about 140° F.

SKELLYSOLVE-X. A heavy, slow drying
naphtha having a high flash point.
Used to increase the wet edge time, to
give better flow and leveling character-
istics tending to eliminate brush and
lap marks in hot weather.

Ask about our
Skelly Petroleum Insoluble Grease
and wide range of aromatics.



Skellysolve

SKELLY OIL COMPANY
TULSA, OKLAHOMA

Industrial Division:

605 West 47th Street, Kansas City 41, Mo.

NEW PRODUCT DEVELOPMENT

Before introducing a new product, top management must review the entire project from the standpoint of risk-taking, profitability and financial requirements.

By
Lawrence Shatkin

THE successful commercialization of a new product requires communication, coordination, and control of the skills and abilities of many persons in different departments: fundamental and applied research, engineering, production, purchasing, product development, marketing, sales, service, and finance. The coordination and integration of these activities is a top management function, and a broad marketing concept must prevail in which products are planned by knowing customers' desires and requirements. In other words these activities should be customer oriented.

Management Review

Before authorizing the introduction of a new product, top management reviews the entire project from the standpoint of risk-taking, profitability, and financial requirements.

The required coordination in product development often violates the accepted principles of line-staff management. Yet it is accepted in product development because it affects the survival and growth of a company. The heart of coordination is communication, and this is difficult to achieve because many of the people involved hold different points of view.

To avoid a major financial catastrophe, attention must be focused during the early stages of

product development, because as we approach the end of the marketing cycle, the costs become prohibitive.

Objectives

The launching of any program must have goals, and alternatives for reaching these goals. A segment of this program will be concerned with improving present products or manufacturing processes. Another area will deal with the evaluation of new raw materials which may lead to the development of new products. This occurred with the introduction of polyvinyl acetate and acrylic emulsions, which are being further modified to enlarge their use as ex-

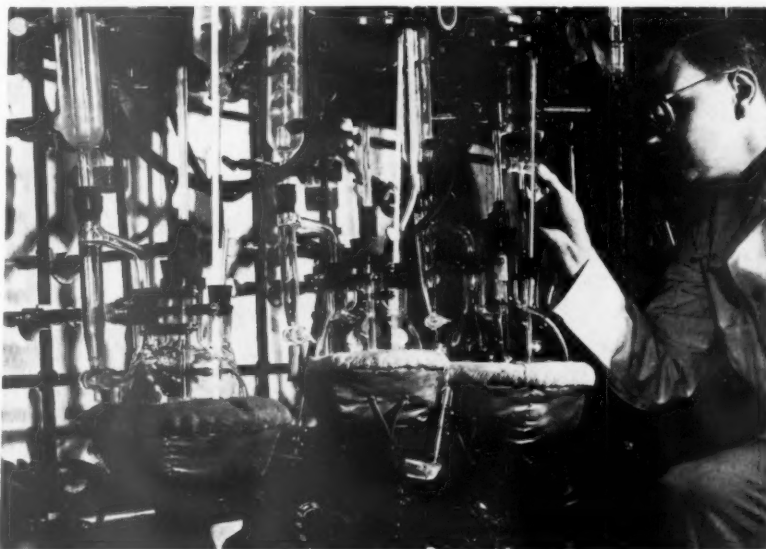
terior coatings. However, as a matter of company survival, growth is necessary, which must come from market expansion through the introduction of new products. He who innovates and assumes the greatest risks will reap the greatest gains; he who adapts to these changes will obtain moderate gains. But, he who merely imitates will, sooner or later, become stagnant because the timing of his activities has lagged considerably, and the market will have become saturated.

In any event, these objectives should be set up in which all the efforts involved are used in the most effective manner. This requires team effort to develop new products.

Origin of Product Ideas

There have been two main forces in the organization that have been responsible for new product ideas: the sales department and the research and engineering departments.

The salesman is the liaison between the company and the marketing outlet, and is in a position to evaluate customer needs and possible new applications. Also he is able to furnish information regarding competitive products, and the possible invasion of new or substitute items. He is familiar with what is occurring in the field, and for many smaller companies, he can furnish basic marketing data which can be analyzed by the mar-



Evaluation of new raw materials may lead to the development of new products.

The opinions expressed in this feature are not necessarily those of any particular firm or organization.

keting director. The salesman should not be considered a mere "peddler", but a fruitful source of ideas relating to improved or new products.

The research and engineering departments are constantly investigating raw materials and processes. Their evaluation of new products, re-evaluation of work that has been completed, and penetrating thinking about current problems, evokes new ideas. It is believed that fundamental and basic research belongs to the larger enterprises. However, I believe technical persons should be allowed to pursue an idea in an "unorthodox" approach, if necessary. Such flexibility should be inculcated into the management philosophy of a company.

Ideas can also come from a suggestion program. If this is encouraged, it is possible that many ideas will come while away from the job. Ideas can also come about from outside sources such as management engineers, marketing research consultants, advertising agencies, stockholders, etc.

Stages of Planning

Product planning is not an exact science and measurement is not easily achieved as in the physical sciences. Before formulating ob-



Further testing is necessary to make a final product decision, which launches the product in full scale production and sales.

jectives, it must be decided by management what funds are available to explore the idea, which must have been screened in order to separate those that are worthwhile pursuing. The collection and tabulation of facts and opinions enables one to appraise each idea for its potential value to the enterprise.

The next step is the establishment of specifications, which ushers in the development and manufacture of the product. It is possible that these specifications may have to be revised after complete laboratory evaluations have taken place.

Further testing is necessary to make a final product decision,

which launches the product in full scale production and sales. Production and distribution problems are coordinated, results are checked, and profit and loss figures are examined.

1. Failure to keep products customer-oriented.
2. Failure to estimate market potential.
3. Failure to ascertain market trends.
4. Failure to establish long-range marketing policies.
5. Tendency to become complacent.
6. Reluctance to try new ideas.
7. Failure to place the "marketing" concept into the business philosophy.
8. Failure to admit defeat.
9. Failure to change direction.
10. Failure to make decisions.

Product Policy

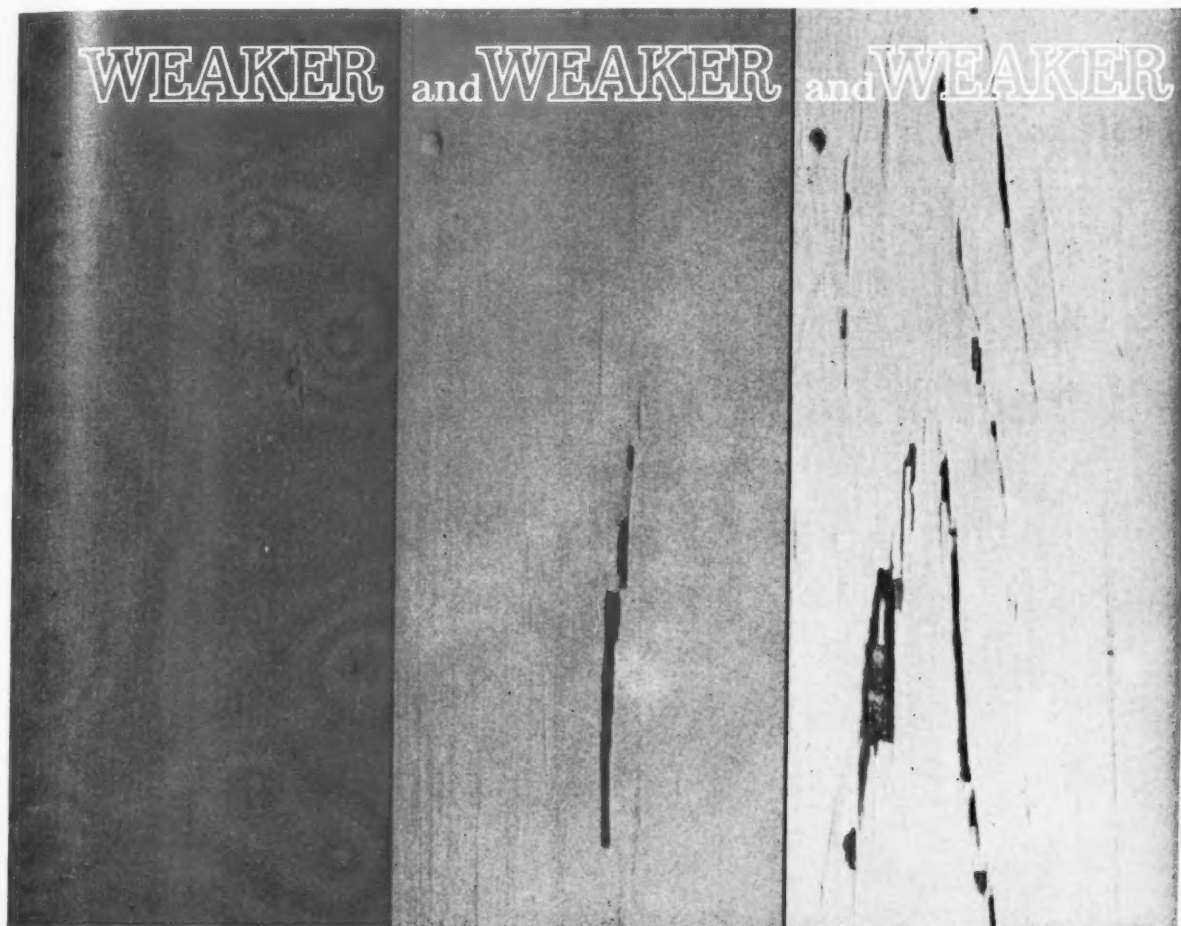
It is necessary to develop a written product policy that expresses short-range marketing tactics and long-range marketing strategy. Such a policy will focus on the company's strength, both physical and human.

A product policy should require that items and lines of items be re-appraised every year, and those indicating a downward trend should become candidates for elimination. The crucial thing is not how wide the product base becomes, but rather, how profitable it is. A company should examine what products, if any, have been eliminated, and those that have been added in the last two years. We know that "the consumer is king". The manager's job is to supply the consumers' needs and wants.



The salesman is the liaison between the company and the marketing outlet, and thus is in a position to evaluate customer needs.

The chemical resistance of some coatings just gets



but AROCLOR® plasticizers and resin extenders can give your coatings lasting chemical resistance . . . at lower cost

AROCLOR *chlorinated polyphenyls*—liquid or solid—do not burn, oxidize, hydrolyze, evaporate, or dissolve in water. When you use an

AROCLOR compound, your coating formulation will be more resistant to flame, heat, moisture, harsh corrosives . . . and *probably less costly*.

Consider all these extra benefits Aroclors give:

COMPATIBILITY—with all common coating ingredients

ADHESION—especially to smooth masonry and metals

TOUGHNESS—for less water spotting, superior film-forming

FLEXIBILITY—from permanent plasticizing action

VERSATILITY—liquid or solid, as plasticizers or extenders

NONBURNING . . . NONOXIDIZING . . . LOW COST



Monsanto, maker of more plasticizers than any other company, provides these benefits to customers:



precisely right plasticizer systems



mixed-shipment savings



able technical help in depth

THIS NEW BOOKLET

tells precisely how you can make lower-cost, longer-lasting protective coatings with the versatile AROCLORS. Send for it today.



MONSANTO CHEMICAL COMPANY

Organic Chemicals Division
Plasticizer Council, Dept. 2787-F
St. Louis 66, Missouri

Please send me PI-327, "Monsanto Plasticizers in Protective Coatings."

NAME

TITLE

COMPANY

STREET

CITY.....ZONE.....STATE.....

CHARGE YOUR MILLS WITH...
HIGH DENSITY (SP. GR. 3.4)
Coors **GRINDING
BALLS**



Save Time! Save Money!

REDUCE your grinding time 40 percent or more! Increased grinding efficiency results from the greater weight (Sp. Gr. 3.4) of Coors High Density Grinding Media.

INCREASE production of existing mills by taking advantage of the reduced grinding time—or you can increase the batch and get more volume from your mills on your present grinding schedule.

IMPROVE milling results—by operating your mills at lower temperatures, by eliminating excessive amounts of unground material, by making it easier to clean the media and by getting longer wear from the media and the mill lining.

We shall be glad to give you our recommendations on how to achieve these results if you will write to us on your company letterhead and describe your operating problem.

COORS PORCELAIN COMPANY

600 NINTH STREET—GOLDEN, COLORADO

Manufacturers of High Density Grinding Media and Mill Liner Brick.

RADIANT HEATING for VARNISH PRODUCTION

Sinclair and Valentine finds radiant heating helps increase varnish production rates, improves quality and increases kettle life

WHEN Sinclair and Valentine recently put two new ink plants into operation to meet steadily increasing volume requirements, the latest developments in instruments, testing devices and processing equipment were installed. Result: improved product quality and adoption of definitive, systematic controlled procedures of manufacture.

One processing innovation of outstanding interest is the use of three Duradient-burner-fired enclosed settings for "cooking" varnishes (see production page), at Secaucus, New Jersey—the new plant decided on for the production of varnish, as well as ink making.

Increased Production Rates

Built by Selas Corporation of America, Dresher, Pa., these three enclosed units have helped increase the production rate of varnishes for manufacture of quality printing inks, despite their relatively small, space-saving size. They are not only satisfying varnish requirements for the Secaucus plant—one of the largest of Sinclair and Valentine's 47 plants—but for 35 other S & V plants, as well as the plants and subsidiaries of about 12 other manufacturers.

The reason for the unique com-

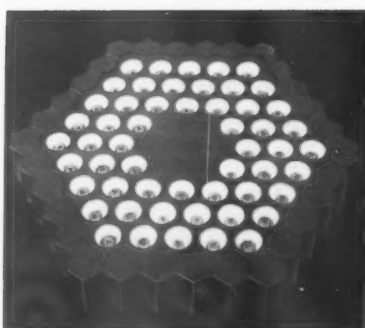


Figure 1. Cluster of Duradient burners beams radiant heat to bottom of kettle at the speed of light . . . provides uniform heating to bottom of kettle without charring.

bination of heating equipment that was installed and being able to do the same job in half the time of the former facilities lies in the advanced technology of the type heating being used — Gradation heating.

In the enclosed setting for the 1000-gal water-jacketed kettle for example, a cluster of two separately-controlled groups of Duradient burners is used (see Fig. 1). These burners create radiant heat by burning a controlled gas-air mixture against their special cup-shaped refractory surfaces. The cup surfaces beam the radiant heat at the speed of light to the bottom of the kettle, which sits only 12 in. above the burners.

The accelerated heating rate in processing batches of varnish is achieved by a combination of this controlled rate of uniform heating and close proximity of the kettle to the heat source. Such proximity because the burners produce no harmful flame impingement on the bottom of the kettle that would cause hot spots and charring. . . a feature that adds years to the length of kettle life.

This faster Duradient burner heating has made a marked improvement in the quality of all varnishes at the Secaucus plant. The shorter cooking cycles allow better control of color, viscosity and acid value.

In addition to faster heating, each Duradient cluster provides an exceptionally wide range of heat input for its respective kettle—the cluster for the 1000-gal kettle, for instance, has a maximum rating of 1,320,000 Btu/hr and a minimum of 145,000 Btu/hr. With combustion and automatic control systems designed to respond quickly and accurately to process changes, the operator is able to duplicate exactly a given set of control conditions for each similar type batch.

This versatility and accuracy of batch cooking, combined with the increase in heating speed, is



Figure 2. Wheelco instrument panel, for completely automatic operation of settings, includes: Capacilog strip chart recorder; Limitrol to pre-set temperature and protect batch; Flame-O-trol to shut down burners in case pilot flame is extinguished by gas, air or electric failure.

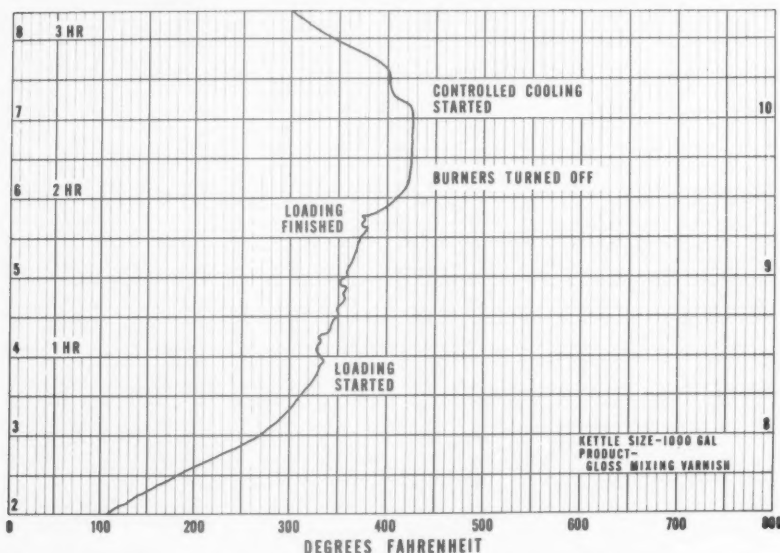


Figure 3. Bringing charge of 350 gal. of linseed oil to 325° F takes only 50 min., as can be seen on chart. Note continued rise of temperature while loading is in progress and quick rise to pre-set temperature after loading is finished.



Figure 4. Operator loads drum of high melting, high gloss resin into charge of Duradant-burner-fired kettle.

making it possible for the Secaucus plant to manufacture a complete line of quality varnishes for the manufacture of printing inks—everything from gloss mixing, heat set, moisture set and overprint varnishes and alkyds, to highly specialized types of varnishes.

Automatic Control

A quick look at the automatically-controlled heating of one specific type varnish, a gloss mixing varnish, reveals several other benefits being gained with the change to Gradation heating.

When the plant opens up in the morning, a catalytic combustion unit for burning off all excess fumes from the kettles is started and the "burn-off" temperature selected according to the varnish being processed.

Next, the temperature indicator on the instrument panel (Fig. 2) for the 1000-gal kettle is preset to 425°F; batch heating temperatures for the complete line of varnishes range from 400° to 550°F. The kettle, after being charged with 350 gals. of oil (pumped from a tank farm through a meter into the kettle) is then purged and the burners are automatically ignited on a controlled sequence basis. The kettle's turbine is also put into operation for mixing components and assuring a homogeneous solution.

Only 45 min. is required to bring the batch of linseed oil up to 325°F. (see chart in Fig. 3), at which point the operator starts loading several thousand pounds of a high melting, high gloss resin into the charge of the kettle (Fig. 4). During this stage of operations, inert gas is piped into the kettle to further improve the color of the finished varnish.

Even with this heavy, constant loading, which takes about an hour, the temperature of the batch continues to rise at a modest rate, as can be seen on the chart. After all the drums of resin have been added, the temperature rises quickly to its preset level in a little less than a half an hour, whereupon the Duradant burners automatically shut off.

During the next 20 to 30 min., while the batch continues mixing, samples are drawn off for checking in the varnish control laboratory.



for
that
new
distinctive

finish

Nacromer[®]
SYNTHETIC PEARL ESSENCE

Formulated for use with practically all coating vehicles...for application by almost any coating method, Nacromer transforms ordinary coating materials into eye-catching "sales-feature" finishes.

Coating users, on the alert for something different to make their products stand out, will be interested in Nacromer coatings because they are different...because they add unusual beauty...and, because they're easy to use.

If you are looking for a new distinctive finish, why not try Nacromer?

NEW 8-PAGE HANDBOOK

Our new 8-page Nacromer Pigment Handbook and 4-page "Coating with Nacromer Pigments" brochure contain much valuable information on the use of Nacromer. Write for your copies today.



THE MEARL CORPORATION
41 EAST 42nd STREET, NEW YORK 17, N.Y.

The drop in batch temperature during this checking interval never exceeds 2° or 3°F.

Once samples have been approved by the laboratory for viscosity, clarity, color and other specification requirements, the water-cooling system in the jacketed kettles is started. A controlled cooling period of about 45 min. is allowed before the finished varnish is pumped out of the kettle, through a filter unit to remove any foreign matter, solids or insoluble material, and into 55-gal. drums.

One full hour is saved in the heating of each batch with this new faster system...a time saving that is doubled when the 2000-gal steam-jacketed thinning tank, located on the floor below and connected to two kettles, is used.

For additional flexibility in meeting special varnish requirements of smaller volume, several open Selas Duradant settings are also maintained to heat one to three 55-gal drums of varnish.

Other benefits realized with the new Gradation heating system, in addition to increased production capacity and improved product quality, include: less fuel required for reduced number of heating units...a 50% saving on floor space...and no increase in labor required to make the doubled production rates possible.

General Mills Develops Epoxy Co-Reactant

Epoxy co-reactant, XR-2000, is available in commercial quantities.

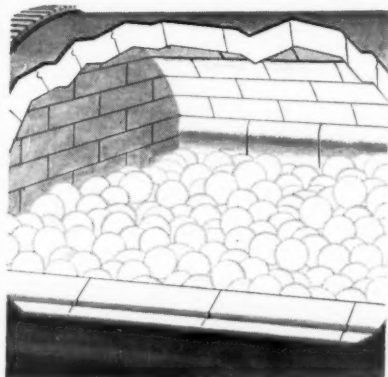
XR-2000 has a low viscosity, promotes rapid room temperature cure of epoxy systems, and makes possible a higher degree of loading in filled formulations. It imparts excellent chemical resistance, solvent resistance, and physical and electrical properties to cured epoxy systems, General Mills reports.

Filled formulations utilizing XR-2000 exhibit easier handling than most highly filled compounds. The new co-reactant also provides permanent internal flexibilization.

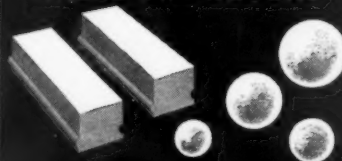
Areas of use include adhesives, 100% solids coatings, concrete topping formulations, laminating, potting and encapsulating, and plastic tooling.

LET FASTER GRINDING LONGER LIFE

*make money for you
in the mill room!*



ARLCITE[®]
BALLS and BLOCKS



High-density ARLCITE grinding media goes hand-in-hand with today's modern mill practices to speed production and lower operating costs.

Only ARLCITE has the optimum balance between high density and bonding qualities to give you up to 50% faster grinding while extending service life over 300%. Tongue and groove construction insures a tightly keyed lining which remains firmly in place.

**PORCELAIN
DIVISION**

FERRO CORPORATION
East Liverpool, Ohio

**IT'S A
FACT!**

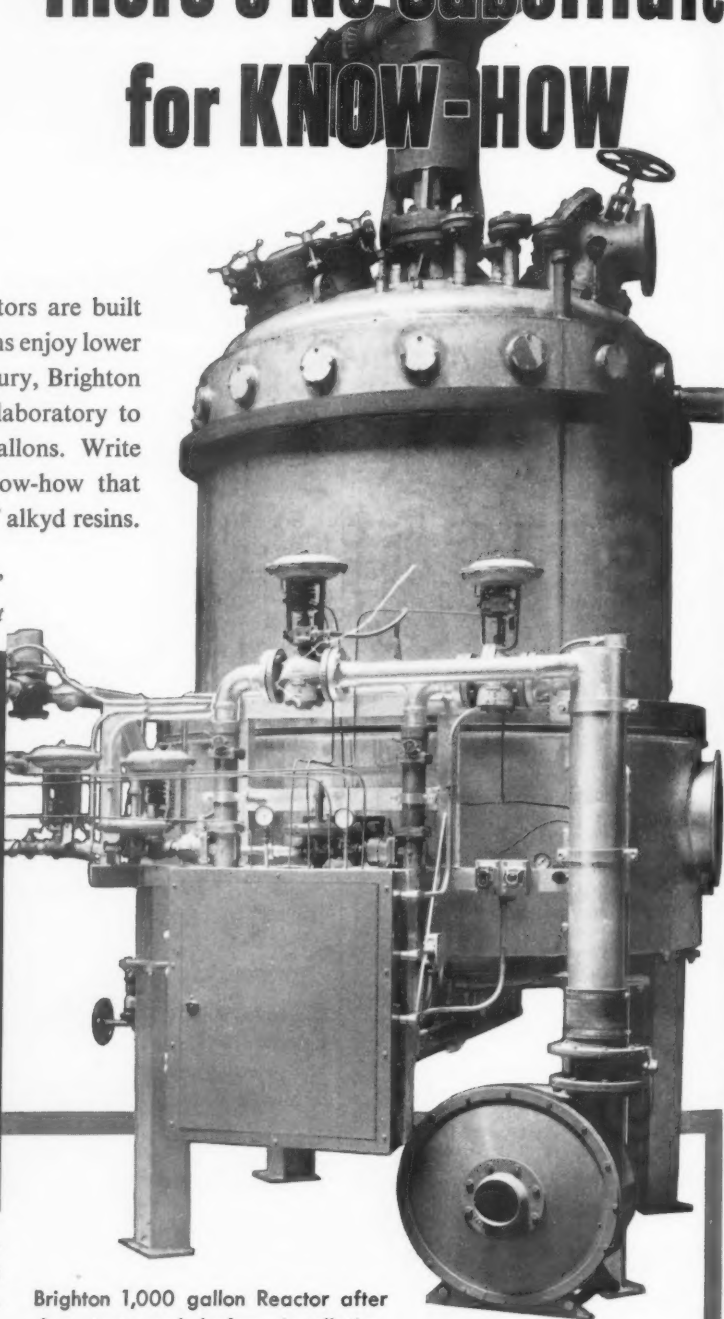
**there's No Substitute
for KNOW-HOW**

Because Brighton's Stainless Steel Reactors are built the *better way*, processors of synthetic resins enjoy lower production costs. For a quarter of a century, Brighton has fabricated Alkyd Resin Plants from laboratory to production size reactors up to 5,000 gallons. Write Brighton for the original and proven know-how that can illustrate lower costs in production of alkyd resins.

*Write for "The Story of Alkyd Resins"
narrating processing and illustrating equipment*



Standard Model D-110-A. Brighton Laboratory and Pilot Units with Dowtherm, Electric or Steam Heat. Sizes from 10 to 100 gallons, gross capacity. Ask for Catalogue LB-2.



Brighton 1,000 gallon Reactor after shop test, and before installation.

BRIGHTON

METALSMITHS
EST. 1914



CORPORATION

820 STATE AVENUE • CINCINNATI 4, OHIO

ute
New

Developments

Misco Introduces New "Lightnin" Line of Mixers

A completely new line of "Lightnin" propeller-type portable mixers for fluid agitation in process industries has been announced by Mixing Equipment Co., Inc., Rochester, N. Y. Designed as an integral unit, the new mixer offers increased mixing efficiency, improved handling convenience, and maintenance-free operation. It will be marketed in sizes ranging from $\frac{1}{8}$ HP to 3 HP, and will also be available in a fixed mounting design in all except $\frac{1}{8}$ HP sizes.

The new mixers offer not only direct-drive speeds of 1750 RPM and 1150 RPM with higher impeller heads, but also a gear-drive model speed of 350 RPM providing up to 45% more flow than previous units.

Gear drive models are quiet running, leak-proof, and equipped with single reduction, internal helical gears for compact drive, additional strength, and improved gear life. Both direct and gear-drive models rotate clockwise.

A unique feature of the new series the firm says, is its exclusive, positive drive chuck, permitting fast, accurate coupling in one simple operation. Its location is always above the maximum fluid level of the mixing tank. A flat on the mixer shaft insures a positive grip and correct position with each shaft insertion.

Specially-designed chemical plant motors, standard at no extra cost with both portable and fixed-mounting mixers, are ball bearing, totally enclosed or explosion proof.



Laboratory technician employs pyrometer temperature device to check motor housing and check temperature of large ND-4B portable Lightnin mixer.

In the portable line, optimum mixing efficiency is assured by means of a unique position-indexing device on the housing ball and clamp socket. The mixer can be adjusted 90° in the vertical plane and 360° in the horizontal plane. The index pinpoints the mixer's optimum position and facilitates repositioning in one operation.

ULTRA-FINE ASBESTINE[®] 425 IMPROVES OIL OR EMULSION SEMI-GLOSS SYSTEMS

Asbestine 425, International Talc's ultra-fine fibrous magnesium silicate pigment, is tailored to give a Hegman grind of 5 to 5½ without milling. This stir-in talc is especially recommended for industrial applications and high-quality semi-gloss finishes where small particle size, fineness of grind and ease of grinding are important. Its fine particles, equivalent to 625 mesh, are free of hard to disperse flocculates.

Asbestine 425 greatly assists dispersion of tinctorial pigments. It is easy to incorporate in oil, resin or water emulsion paints and enamels. In these systems, its excellent color, normal vehicle demand and ease of dispersion can be translated into savings in raw material and manufacturing costs.

Write for samples and further data on Asbestine 425. No obligation, of course.



ONLY PRODUCER OF ASBESTINE

INTERNATIONAL TALC CO., INC.

WORLD'S LARGEST PRODUCER OF TALC

90 WEST STREET, NEW YORK 6, N.Y.

Cable Address
FIJAMENTE

Warehouse stocks carried by representatives in Principal Cities throughout United States and Canada

Bendix Develops Process Control System

New high-performance automatic process control system for petroleum refinery, petrochemical plant and food chemistry applications has been developed by The Bendix Corp.

A major advantage of the system, according to the firm, is that industry can now use a general-purpose digital computer for automatic industrial process control, instead of requiring a specially designed computer.

Prior to the development of the system, the company states, process control for large blending operations was costly and complex. As the major element of the system,

the Bendix G-15 general-purpose digital computer provides precise control of ingredient blending operations that have not been obtained through electro-mechanical or analog techniques.

The G-15 computer controlled system has shown a significant equipment cost advantage when compared to an operationally equivalent, manually operated electro-mechanical system.

Cost savings that can be expected to accrue are in direct labor savings and improved control of product quality, he added.

The system marketed by the Bendix-Pacific Division, North Hollywood, Calif. may be used in any process involving multi-channel

blending. Missile propellant control systems, color control in the plastics and paint industries, synthetic rubber manufacturing and gasoline distribution terminals were cited as examples.

Exact control of the ingredient stream, blend composition, and final product blend is accomplished through use of high accuracy digital turbine flow meters and exceptionally fast piston valves containing one moving part. In addition to the on-stream measurement and control aspects of the system, the computer automatically tallies and remembers the true flow of all ingredients used.

Break-Through in Container Design Announced

A major break-through in cargo movement has been achieved by means of a new collapsible plastic container announced by Highway Trailer Industries, Inc., New York City.

The new containers will make it possible, it is said, to carry grains in one direction, for example, and liquid chemicals in the same containers on the return trip without danger of contamination. As a result, they will effect important economies in shipping highly diversified cargo. They can be especially valuable for less-than-truckload or carload quantities.

They will be introduced in September under the name "Flexi-Drum."

Key to the break-through is the



New collapsible plastic container.

use of very thin, disposable plastic liners inside a heavy-duty plastic body which can be handled by conventional fork lift truck, hoist or crane equipment.

Inventor Ernst H. Doerping-
(Turn to page 78)

THEY'RE SWITCHING

TO KODIS

COLORS
UNIVERSAL CONCENTRATES

Pre-standardized, pre-screened, highly concentrated dispersions of excellent compatibility with both oil and water paint systems, Kodis Colors enable the user to maintain minimum inventories with maximum versatility. The broadest possible variety of shades are readily obtainable.

Kodis Colors have been found to meet all the requisites for the coloration of paint products by in-plant tinting, tube colors and for color dispensing machines. They are superior in light stability, alkali resistance and package stability. Send for samples, brochure and consult our sales service laboratory.

First Producers of Certified Colors



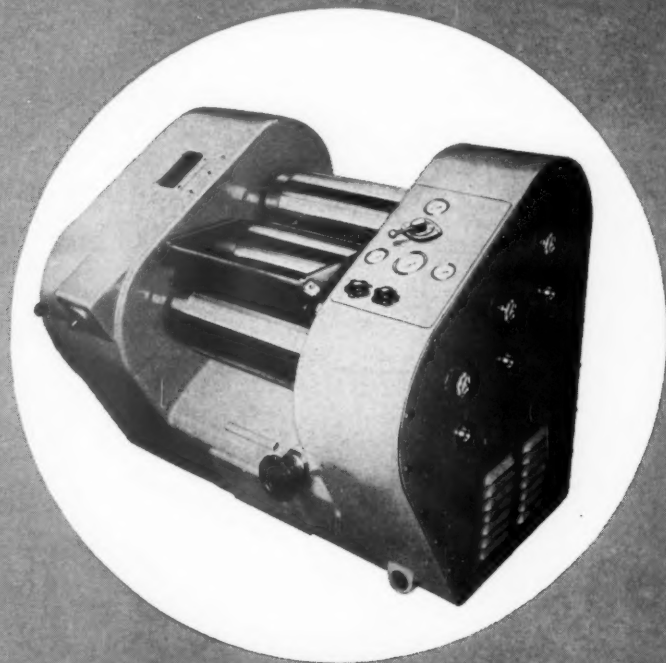
H. KOHNSTAMM & COMPANY, INC.

Experts in Color Technology Since 1851 • 161 Avenue of the Americas, N. Y. 13
11-13 E. Illinois St., Chicago 11 • 2622 E. 54 St., Huntington Pk., Calif.

*PATENT PENDING

New fully hydraulic

BUHLER 3-Roll Mill



SDA

Roll Dimensions: 10" x 20"

SDT

Roll Dimensions: 16" x 32"
16" x 40"

- Up to 60% higher output
- Absolutely even pressures for uniformly fine grinding

1. New hydraulic regulating system provides absolute pressure stability and easiest (1 second) setting of rolls.
2. Determines exact pressure for any formula and duplicates it for that formula at any time.
3. Rolls disengage for cleaning in 1 second. A simple hand-lever shift disengages rolls and scraper blade instantly. By shifting hand-lever back to operating position, rolls and scraper blade are restored to the exact pressure they were set at before disengaging.
4. New feed hopper arrangement increases working

surface. Hopper cheeks do not rest on the roll, but are hydraulically pressed to the shoulder of the roll; permit grinding across the whole length of the roll, with even wear.

5. Hydraulically operated scraper blade maintains selected pressure irrespective of wear. Never loses pressure — hydraulic control takes up automatically to maintain exact selected pressure with wear.
6. Can be furnished with variable speed drive for the first roll, or driven by a 2- or 3-speed motor. Regulating the speed of the first roll for paints and inks of different consistencies increases the capacity 60% and more.

BUHLER BROTHERS, INC. (U.S.A.)

130 COOLIDGE AVENUE, ENGLEWOOD, NEW JERSEY

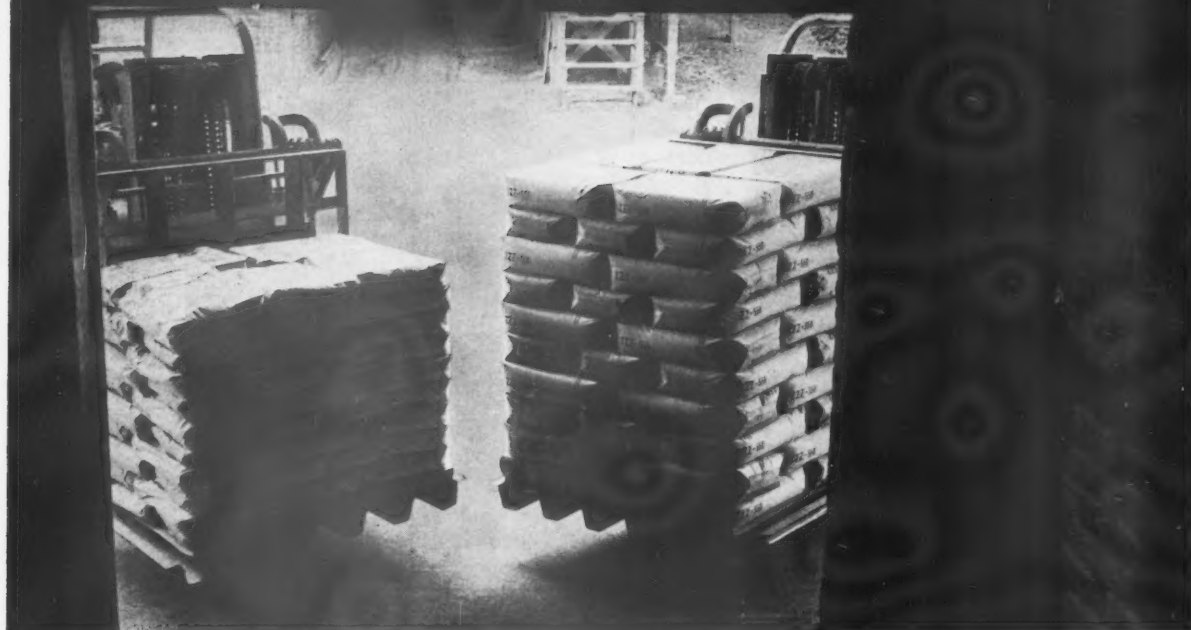


BUHLER BROTHERS, (CANADA) LTD.

24 KING STREET WEST
TORONTO 1, ONTARIO

**Now you can greatly increase warehouse space*
at no increase in cost with...**

AZODOX high apparent density zinc oxides



You can store AZODOX in much less warehouse space than required by other zinc oxides. Reason is, you get many more pounds of AZODOX per cubic foot of pigment, up to 65 lbs./cu. ft.! And smaller bags handle easier, faster—stack higher safely—reduce breakage losses—are shaped to give close-packed, unitized shipments.

In the manufacture of AZODOX, an exclusive process removes excess, space-wast-

ing air from between individual particles of zinc oxide. That's all! Actual pigment density and all other desirable properties are unchanged. In comparison with other zinc oxides, high apparent density AZODOX flows freely yet dusts less, increases mixing capacity, disperses readily.

You can get high apparent density AZODOX in five grades of AZO brand lead-free paint pigments: acicular or nodular particle shape. For technical data, just fill in and mail this coupon.

*Pallet load of AZODOX on left above is 30.4 cu. ft. Pallet load of regular zinc oxide on right is 44 cu. ft. Same number of bags; same weight... but a 30 percent saving in space!

AMERICAN ZINC SALES COMPANY
1515 Paul Brown Bldg., St. Louis 1, Mo.

Please send me technical information about...

- ☐ AZODOX high apparent density zinc oxides
☐ 15 types of AZO brand zinc oxides

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

American
Zinc sales company

Distributors for
AMERICAN ZINC, LEAD AND SMELTING COMPANY
Columbus, Ohio • Chicago • St. Louis • New York

NEW EQUIPMENT AND MATERIALS

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



THOMAS

CODER

3-Color Operation

High-speed coding and printing without the mess and fuss of fluid inks are now possible through the development of a new series of machines.

The Model 100 series of coders and printers is designed for attachment to packaging machines or powered conveyors of all types. They synchronize with the action of the parent machines, printing onto boxes, cartons, craft paper, and other porous or semi porous surfaces.

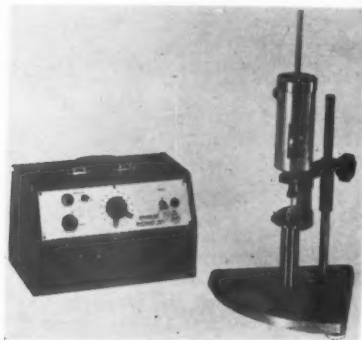
Inking of the coders is done by a roll of Porelon solid ink. This roller, a self-contained inker, replaces fluid inks, solvents, fountains, felts and the maintenance connected with such items; it cannot drip, evaporate or gum up; when exhausted, it can be changed in less than 10 seconds.

The new 100 series coders are compact and well constructed, with

anti-friction bearings guaranteeing rugged, trouble-free performance. The machine itself measures 7 x 4-3/8 x 3", with an extended drive shaft 8" long. Printing head diameters of 6", 8", and 10" are available to accommodate various pitch distances in the feeding of packages through conveyor systems.

The coders print from any position, onto any side of the package. They will print up to 250,000 quick-drying impressions onto any porous or semi-porous surface, with a single roll.

Thomas Engineering Co., Dept. PVP, 9157 N. Laramie Ave., Skokie, Ill.



FECKER

VISCOMETER

15 Readings

New 15-speed viscometer for laboratory and in-line process use has been developed. This unit is capable of 15 readings that can be used to produce very accurate rheograms and automatically control manufacturing processes, when flow characteristics are a function of product quality. The viscometer speed varies from 5.6 R.P.M. to 352 R.P.M. with shear rates from 1 to 2000 seconds and shearing force from 2 to 200,000 dynes per square cm. It measures viscosity of liquids, pastes and many plastic materials in the range from 0.2 cp. to 10,000,000 cps. The

electrical requirements are 110 volts, 60 cycle AC.

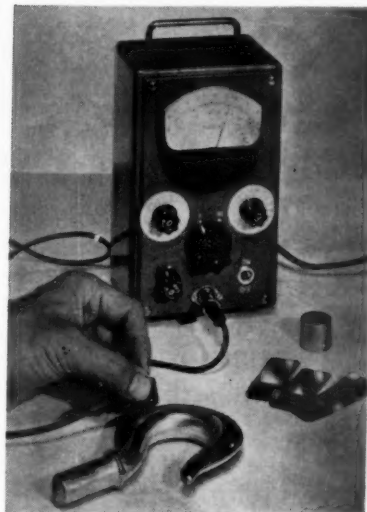
J. W. Fecker, Division of American Optical Co., Dept. PVP, 6592 Hamilton Ave., Pittsburgh 6, Pa.

THICKNESS TESTER

Gages Coatings on Iron

New instrument has just been introduced for gaging the thicknesses of coatings on iron and steel. Identified as the "ES Permascope," the device provides a non-destructive means of measuring thicknesses of organic and non-magnetic metal coatings (including phosphate) with the accuracy of the microscopic method. It is reported to be ideally suited for testing coating thicknesses on piston rings, thin wire, screws, nuts, pipes and cylindrical containers, as well as for gaging the thickness of foil or sheets made of non-ferrous materials.

At least two scales of measure-



TWIN CITY

ment are provided with the second scale starting where the first scale ends. For example: Model ES le 2 J4a has two scales with ranges of 0-0.001" and 0.0008"-0.0010". Model ES le 3 J4a has three scales with ranges of 0-0.001",

**NEW
MATERIALS — EQUIPMENT**

0.0008"-0.010" and 0.008"-0.100".

Hardened beryllium copper foils in accurately-determined thicknesses are furnished for calibrating the instrument. Control dials permit quick recalibration for a given test specimen without the use of foils.

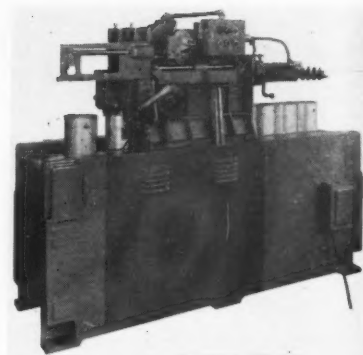
Four probes are available with distances between poles of 5/32", 1/2", 5/8", and 1" for measuring thicknesses up to 3/4". A special attachment can be furnished for applying the probe at constant pressure to soft materials as well as to small diameter wire. Other accessories include a holding fixture

for measuring plating thicknesses on piston rings and an attachment for gaging coatings on the inner walls of tubing, pipe and cylinders (with min. I.D. of 11/16") at any point within the bore, regardless of depth.

Twin City Testing Corp., Dept. PVP, 533 South Niagara St., Tonawanda, N. Y.

**ASSEMBLING MACHINE
Shapes Bails**

New automatic bail making and assembling machine, shapes bails (handles for cans) and affixes them mechanically to one-gallon double-tite paint cans at the rate of up to 40 a minute, thus eliminating the tedious task of putting them on by hand.



AMERICAN CAN

The machine answers a need that has existed for more than forty years in the paint industry. It removes the last hand-operated step in the production-line assembly of one-gallon double-tite paint cans and enables a plant to realize impressive savings in time and in costs.

The new machine removes the storage problem completely. Bails are fabricated right on the machine the second before they are locked into the ears of the can. A single reel of wire coil, which can produce up to 8,500 bails, now replaces the individual pre-formed bails. The machine, which is capable of shaping and assembling up to 2,400 bails an hour (19,200 in an eight-hour work day) frees four men—bail maker, carter, sorter and inserter—for other production line assignments.

The new machine enables the production line of the one-gallon double-tite paint cans to function for the first time as a fully automated unit. The unit itself is compact. It takes up approximately 14 square feet—about the same area as an executive desk—and can be easily integrated into present production line setups."

The machine's dimensions are 24 inches wide, 79 inches long and 61 inches high. It takes unformed coil wire, shapes and forms it into bails and assembles each bail to the ears of the one-gallon cans in a smooth, continuous, uninterrupted and fully automated operation.

American Can Co., Dept. PVP, 100 Park Ave., New York 17, N. Y.

**SODIUM BORATE
Powdered Form**

FR 28 is a Sodium Borate product in a readily soluble powdered form, containing approximately



ZEOLEX 80

**SILICA PIGMENT FOR LATEX PAINTS
CUTS FORMULATION COSTS**

A new, unique pigment to effectively disperse titanium dioxide in latex and emulsion paints, Zeolex 80 makes possible important savings in formulation costs. It promotes better utilization of pure titanium dioxide, costs 1/2 as much. . .and has 1/2 the density. There is no sacrifice in film quality.

Zeolex 80, a "tailor-made" synthetic silica, produces higher optical properties with titanium than are possible with other extender pigments. It combines just the right properties to coat or condition the titanium dioxide, reduces agglomeration and provides greater hiding power than ordinary additives. It incorporates easily into emulsion paints and is handled just like any other wettable pigment.

Sold and warehoused by distributors around the country. For full details, write to:



J. M. HUBER CORPORATION

630 Third Avenue, New York 17, N. Y.

**Kaolin (aluminum silicate) Extenders
Fine Silica Pigments • Carbon Blacks**

NEW MATERIALS — EQUIPMENT

66% B_2O_3 . FR 28 is of uniform composition prepared by a special process and, therefore, is said to have superior properties to any mechanical mixture of Borates which would give a similar chemical composition.

This product has been specifically developed for use as an additive to latex base paint compositions to produce flame retardant coatings.

Hydrogen Ion Concentration—Aqueous solutions of FR 28 range from mildly alkaline at low concentrations to near neutral as concentration increases at ordinary temperatures.

U. S. Borax, Dept. PVP, 630 Shatto Place, Los Angeles 5, Calif.

PHTHALOCYANINE BLUE Red Shade

New flushed phthalocyanine blue has been developed to meet the needs of the paint industry for (1) a red shade blue, (2) a flocculation resistant blue standard and (3) a flushing in odorless general purpose alkyd varnish.

FL-11-378 has a very bright red shade, somewhat cleaner and slightly redder than the standard flocculation resistant dry color. FL-11-378 is about the same shade as competitive flushed products, but it is considerably cleaner. Because it is so clean, FL-11-378 can be shaded with Yellow Iron Oxide or Phthalocyanine Green to match the manufacturer's desired shade.

Tests show that FL-11-378 is as good or better in flocculation resistance than competitive flushed blues and the best of the non-flocculating dry colors. It is considerably cheaper to use than a dry color when the grinding charge of the dry color is taken into account in the total cost.

FL-11-378 is flushed in a general purpose alkyd varnish containing odorless mineral spirits which is recommended for trade sales enamels. Another flushed standard is also available which has the same composition and physical properties as FL-11-378 except that it is flushed in an alkyd made with regular mineral spirits.

Specific data describing FL-11-378 are as follows:

Composition: Solfast Blue R-NCNF special flocculation resistant pigment. . . . 17%

General Purpose Odorless Alkyd

Varnish Dyal XAC-75. . . 31%

Odorless Mineral Spirits. . . 52%

Weight per gallon: 7.8 lbs.

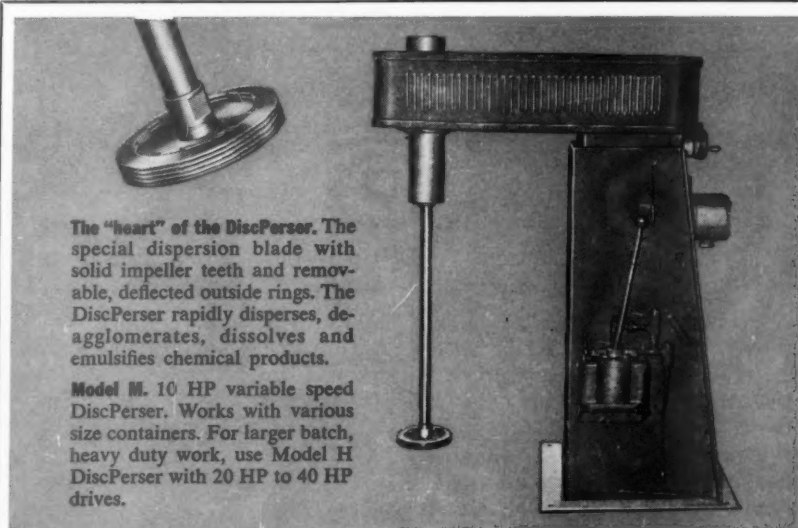
Pigment, Color & Chemical Div., Sherwin-Williams Co., Dept. PVP, 260 Madison Ave., New York 16, N.Y.

CENTRIFUGAL PUMPS

Extremely Compact

Reduced space requirements for the new line of OJV and OMV vertical split case pumps makes them ideal for applications where

extreme compactness is of prime importance. Characteristics and features that have established the long-life dependability and performance of the OJV and OMB horizontal split case pumps have been retained. The case is split parallel with the impeller shaft with the suction and discharge flanges integral in the vertical base section. Rotating unit is removed easily for inspection or maintenance without disturbing the suction or discharge piping connections. Perfect bearing alignment is achieved with in-line boring with top half of case in position. Double suction impellers are hydraulically and dynamically balanced for smooth quiet operations. Ideal for hand-



The "heart" of the DiscPerser. The special dispersion blade with solid impeller teeth and removable, deflected outside rings. The DiscPerser rapidly disperses, deagglomerates, dissolves and emulsifies chemical products.

Model M. 10 HP variable speed DiscPerser. Works with various size containers. For larger batch, heavy duty work, use Model H DiscPerser with 20 HP to 40 HP drives.

NOW! A finished dispersion in a single operation!

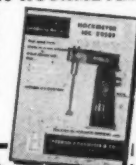
The new HOCKMEYER DiscPerser . . . produces very rapid ultimate dispersion...handles high-viscosity materials!

The DiscPerser's special blade operates at peripheral speeds in excess of 6000 FPM. The solid impeller teeth shred and break up pigment agglomerates. Material is discharged through the slots between the rings, at great speed and under intense hydraulic pressure. Tremendous fluid hammer action is developed by the smashing of material against the surfaces of these deflected outside rings. Material leaves the blade in thin, high-speed jet streams. Impact on the slower moving surrounding material creates further attrition and speeds the breakdown to original pigment particle size.

Versatile, the HOCKMEYER DiscPerser

also: ● Cold cuts and dissolves exceptionally fast. ● Tints and lets-down unusually efficiently. ● Pre-mixes heavy bases for mill equipment; greatly increases the milling operation.

TRY IT AT OUR EXPENSE. The HOCKMEYER DiscPerser can increase your production, improve your product, save you money. Try it free in your own plant. Write for details and free descriptive folder. Act now!



Herman Hockmeyer and Co.
341 Coster St., New York 59, N. Y.

For details of how you can try the HOCKMEYER DiscPerser free in your plant and for a free, illustrated DiscPerser folder, clip this coupon . . . mail it today! PVP-110

My Name _____

Company _____

Address _____

City _____ Zone _____ State _____



HERMAN HOCKMEYER & CO.
341 Coster St., New York 59, N. Y.

NEW MATERIALS — EQUIPMENT

ling high capacities at medium to high heads and continuous operations these pumps are used on applications such as marine services, municipal water service, industrial water service, booster service, cooling towers, fuel service, circulating and boiler feed. Capacities range to 6000 GPM and heads to 380 feet.

Aurora Pump Div., The New York Air Brake Co., Dept. PVP, Aurora, Ill.



EAGLE

DRAIN CANS Easily Cleaned

New drain can for draining flammable liquids from industrial drums, automotive crankcases, and other containers is now being introduced.

Top of the new drain can has a large funnel with a wide opening and perforated metal fire baffle to guard against flame or spark igniting the contents. The top is easily removed for emptying or cleaning the can. The drain can has a seamless body drawn from one-piece 24-gauge terne coated steel. The body and breast are electrically welded under electronic control.

Eagle Manufacturing Co., Dept. PVP, 3124 Charles St., Wellsburg, W. Va.

PIGMENT EXTENDER Easily Dispersed

New pigment extender offers numerous savings to producers of interior emulsion paints. Called "Micro-Cel T-38," the synthetic, hydrous calcium silicate displays good hiding power at low concen-

tration, according to the manufacturer.

Micro-Cel T-38 can effect savings for manufacturers of emulsion paints in either of two ways. From 30 to 35 pounds of T-38 can replace 40 to 50 pounds of titanium dioxide per 100 gallons with no loss of opacity and only slight differences in tint. In existing formulae, more hiding power can be achieved by using moderate amounts of Micro-Cel T-38 instead of adding titanium dioxide. In this latter case, significantly additional hiding power is obtained at a moderate cost, much less than if titanium dioxide had been used.

Micro-Cel T-38 is an efficient flattening agent, especially useful in

reducing angular sheen, even at low pigment volume concentrations. The material is easily dispersed for smooth, low lustre finishes.

Classified as a medium particle size extender pigment, Micro-Cel T-38 give optimum performance when used at levels of 30 to 35 pounds per 100 gallons. It is packed 40 pounds to a multi-walled kraft paper bag.

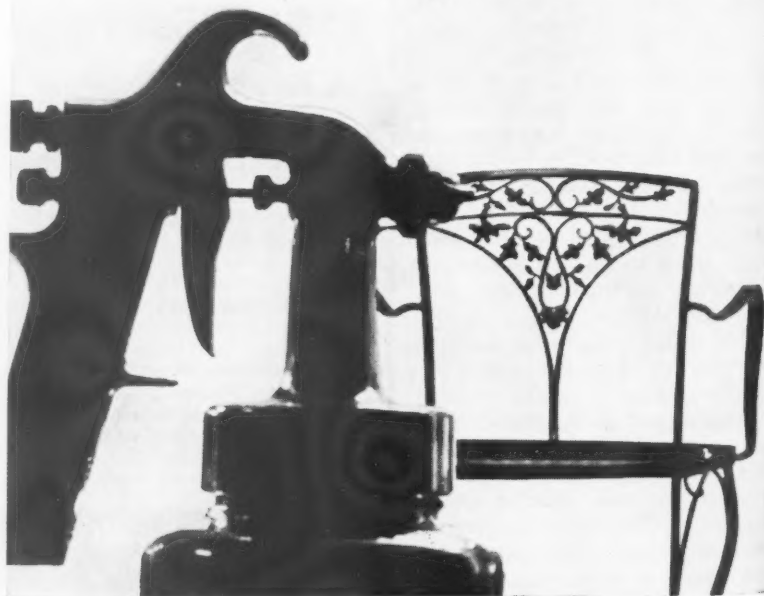
Johns-Manville Corp., Celite Division, Dept. PVP, 22 E. 40th St., New York 16, N. Y.

PAINT WARMER

No Mixing

New inexpensive, portable electric Shokless "150" Paint Warmer has been announced. This heater

Using rosin esters? Consider PANAREZ Resins as a replacement



NEW MATERIALS — EQUIPMENT

may be procured with or without thermostatic control.

Very little solvent needs to be added to heated paint. By greatly reducing the quantity of thinning solvents, the body of the paint is retained providing more uniform coverage, up to six times as great as that obtained with cold paint. Hot paint spreads easily—saves labor.

Mixing is unnecessary. Heated paint circulates, keeping the pigments in suspension at all times.

The Kneisley Electric Co., Dept. PVP, Toledo 3, Ohio.

ORGANIC THICKENERS For Oil-Based Coatings

Two new organic thickeners for oil-based paints, and coatings, have been developed.

Superior Thickener # 912 is a liquid bodying agent which may be added at any point of the manufacturing process, even after the batch has been completed, so as to increase viscosity.

Superior Organic Thickener # 9916 is a powder which is added in the mixing stage. It serves to increase viscosity and provides a multi-purpose gel structure which corrects sag, prevents pigment settling, improves brushability and hold-out of paints.

Superior Materials, Inc., Dept. PVP, 120 Liberty St., New York 6, N. Y.

PHTHALO GREEN DISPERSION Low Water Soluble Content

New phthalo green dispersion incorporating unusual blueness, cleanliness, and extra tinting strength is now being offered. Designated W-6012, this green performs with typical phthalo stability, and insures maximum product uniformity because it is manufactured in large size batches.

Product derives its extra margin of tinting strength through the limiting of its particle size to a narrow band in the very fine range. This is accomplished by using a unique manufacturing process which also renders the product completely non-settling. In addition, storage stability is excellent. Other colors are being developed which, through employing this process, will exhibit the same desirable characteristics. W-6012 green has a comparatively low water soluble content—an important consideration in exterior finishes, such as latex house paints, where maximum film durability to weathering is vital.

The Harshaw Chemical Co., Dept. PVP, E. 97th St., Cleveland 6, Ohio.

LABORATORY BALANCE High Sensitivity

High capacity (up to 6 kilograms), high sensitivity (0.1 gram), and a very sturdy all-aluminum case are the features of a new line of multi-purpose laboratory balances.

Two models are offered: 195-B has a sensitivity of 0.1 g., capacity of 3 kg. (7 lb), tare capacity of $\frac{3}{4}$ lb., beam graduated to 100 g., 50 g., or 8 oz. Model 2-89B has capacity of 6 kg. with beam graduated to 500 g., 100 g., or 16 oz.

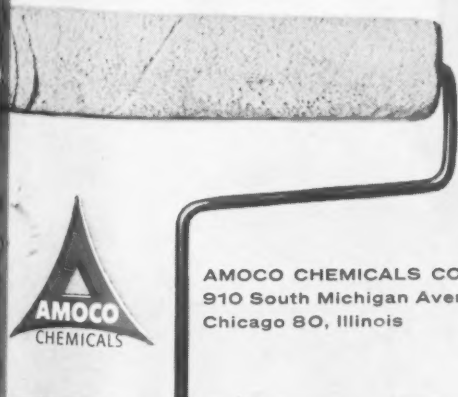
Both models are set in a heavy aluminum case with chemical-resistant blue-gray finish. Both have an easy-reading angled pointed in a protective tower, stainless steel pans or plates, and a tare beam for simplifying measurement of net contents of containers. Dimensions: $16\frac{3}{4}$ " long, 6-1 8" wide, 8" high.

Henry Troemner, Inc., Dept. PVP, 22nd & Master Sts., Philadelphia 21, Pa.

Using PANAREZ Resins to replace ester gum in your surface coating formulations brings you important benefits. One is an assured source of supply. PANAREZ Resins are petroleum derived—supply is unlimited. An assured supply promises greater price stability.

You also get the benefit of product quality improvements when you convert to PANAREZ Resins. Specifically you get (1) superior water and alkali resistance, (2) better drying, (3) improved chemical resistance.

If you manufacture oleoresinous varnishes, modified phenolics, alkyds or chlorinated rubber-based surface coatings, get the facts on PANAREZ Resins from your Amoco Chemicals representative.



AMOCO CHEMICALS CORPORATION
910 South Michigan Avenue
Chicago 80, Illinois



PATENTS

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries \$1.00 per copy) to the publisher.

Process for Preparing Heat Sealable Films

U. S. Patent 2,948,696. William R. R. Park, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich., a Corp. of Dela.

A coating composition useful for coating the polymerizates of mono-alkenyl monomers, said composition consisting essentially of (1) about 25 parts of an aqueous latex composed of 60 per cent styrene and 40 percent butadiene; (2) from 15 to 40 parts of an aqueous latex of a polymer composed of about 80 percent styrene and 20 percent butadiene; (3) from 30 to 60 parts of an aqueous latex of a terpolymer composed of at least 70 percent vinylidene chloride, not more than 10 percent of an alkyl acrylate with the remainder being vinyl chloride; (4) from 2 to 10 parts of a wax having a melting point of from about 60° to 100°C.; and (5) from 0.3 to 3 parts of a solid lubricant for said polymerizate.

Protective Coating Composition

U. S. Patent 2,952,564. Nello R. Traverso, West Springfield, Mass., assignor to Monsanto Chemical Co., St. Louis, Mo., a Corp. of Dela.

A method for protecting steel surfaces which comprises applying to a steel surface to be protected a protective coating composition comprising an aqueous solution of a binary mixture of film-forming polymers and heating the coated surface to a temperature to at least 140°F. for a time sufficient to inter-react the film-forming polymers; the binary mixture of film-forming polymers employed consisting of 10-90 parts of (1) a water-soluble salt formed between a volatile nitrogenous base and an interpolymer of monomers consisting essentially of a conjugated 1,3-diene of the group consisting of butadiene, isoprene, piperylene and 2,3-dimethylbutadiene and an acidic monomer of the group consisting of acrylic acid, methacrylic acid and mixtures thereof, said interpolymer containing at least 25 mol percent of the conjugated 1,3-diene and 15-70 mol percent of the acidic monomer, the volatile nitrogenous base employed having an atmospheric boiling point not substantially higher than

about 175°C., and 90-10 parts of (2) a water-soluble aminoplast of the group consisting of (a) water-soluble formaldehyde condensates of urea, thiourea, aminotriazines and mixtures thereof and (b) water-soluble ethers of such formaldehyde condensates.

In the method for protecting steel surfaces in which a primer coat of a resin is applied to a steel surface and a finish coat of an alkyd resin is applied upon said primer coat and cured; the improvement which comprises applying the primer coat to the steel surface to be protected by the method of claim 8.

Coating Compositions

U. S. Patent 2,952,555. Ales M. Kapral, 3950 Lake Shore Dr., Chicago, Ill.

An aqueous composition of matter consisting essentially of an aluminum soap of a hydrocarbon carboxylic acid containing at least 10 carbon atoms, a volatile inert organic solvent selected from the group consisting of hydrocarbons and halogenated hydrocarbons having a boiling point in the range of 40°C. to 150°C., a basic volatile nitrogen compound selected from the group consisting of ammonia and organic amines and water, wherein the aluminum soap comprises 0.5% to 15% of the composition, the organic solvent comprises 10% to 50% of the composition and the amount of basic nitrogen compound is in the range of 4 moles to 50 moles per mole.

Acrylic-Styrene Coating

U. S. Patent 2,952,655. Edward S. Beck, Park Forest, Ill., assignor to Enterprise Paint Manufacturing Co., Chicago, Ill., a Corp. of Ill.

A coating composition for use in protecting aluminum from the surface deteriorating effects of plaster, mortar, cement, saltspray, weathering and the like which is comprised essentially of a copolymer of methyl methacrylate with at least one lower alkyl ester of methacrylic acid in which the alkyl group contains from 2 to 8 carbon atoms, and an amount of polymerized aliphatic methyl styrene having an approximate molecular weight of 340-375 which is equal to about 1 to 25% by weight of the copolymer, said copolymer and polymerized aliphatic methyl styrene being dissolved in volatile organic solvent and together comprising from about 10 to 50% by weight of the total composition, the solvent comprising the balance of said composition, said composition being capable, when applied as a thin coating on an aluminum surface of quickly drying at normal temperatures to a tack-free, water-white, clear transparent film which strongly adheres to the aluminum and is resistant to light, water and to the surface deteriorating effects of the aforesaid plaster, mortar,

Interested personal service—
always—
when you buy from Eastman

Eastman Solvents

Acetone

Ethyl Alcohol

Tecsol®
proprietary ethyl alcohol
95% and anhydrous

Isobutyl Alcohol

n-Butyl Alcohol

2-Ethylhexyl Alcohol

Ethyl Acetate

Isopropyl Acetate

n-Butyl Acetate

Isobutyl Acetate

For properties and shipping information on these and other Eastman products, see **Chemical Materials Catalog**, page 395, or **Chemical Week Buyers' Guide**, page 107.

Eastman

service—

Eastman

hol
s

1

ing
and
ts,
als
or
rs'

n



What happens
when you buy from Eastman!

Tank truck delivery on Saturday afternoon

"Every now and then we are able to make special service seem real easy," recalls one of our sales coordinators.

"Like the time we filled an order for a tank truck of acetone on Saturday afternoon—and it arrived at the customer's plant before dark.

"I was busy at home (the third inning was just over) when the customer traced me through our plant switchboard operator. He had unexpectedly run out of acetone and

was faced with the prospect of shutting down unless he could obtain at least enough to tide him over the weekend.

"I guess it took all of three minutes to complete two phone calls, including one back to the customer to tell him that we could make the shipment, and for him to have a crew stand by about 6:30 P.M. to unload a tank truck.

"Of course, we had a number of things working for us on this one.

First, the customer's plant was only four hours away by truck. Second, he was able to catch me at home; and third, the customer had a tank truck order for acetone scheduled for Monday delivery, and this tank truck just happened to be loaded, approved, and at the terminal ready to go."

We were lucky in this instance, but do all we can every time, to assure our customers the best service possible.

Eastman CHEMICAL PRODUCTS, INC., KINGSPORT, TENNESSEE, Subsidiary of Eastman Kodak Company

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Boston; Buffalo; Chicago; Cincinnati; Cleveland; Detroit; Greensboro, North Carolina; Houston; Kansas City, Missouri; New York City; Philadelphia; St. Louis.

West Coast: Wilson & Geo. Meyer & Company, San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

cement, saltspray, weathering and the like.

Coating Steel with Water Base Protective Coating

U. S. Patent 2,952,565. *Leo L. Contois, Jr., Corpus Christi, Tex., and John B. Ott, Northampton, Mass., assignors to Monsanto Chemical Co., St. Louis, Mo., a Corp. of Dela.*

A method for protecting steel surfaces which comprises applying to the steel surface to be protected an aqueous solution of a salt formed between a volatile nitrogenous base and a carboxyl-group containing interpolmer and evaporating water from the film deposited on the steel surface; said carboxyl-group containing interpolmer being an interpolmer of a monomer mixture comprising in polymerized from 25-85 mol percent of a conjugated 1,3-diene of the group consisting of buta-

diene, isoprene, piperylene, 2,3-dimethylbutadiene, cyclopentadiene, and mixtures thereof, and 15-70 mol percent of an acidic monomer of the group consisting of acrylic acid, methacrylic acid and mixtures thereof; said volatile nitrogenous base having an atmospheric boiling point not higher than about 175°C.

In the method for protecting steel surfaces in which a primer coat of a resin is applied to a steel surface and a finish coat of an alkyd resin is applied upon said primer coat and cured; the improvement which comprises applying the primer coat to the steel surface to be protected by the method of claim 1.

Coating Compositions

U. S. Patent 2,952,555. *Ales M. Kapral, 3950 Lake Shore Dr., Chicago, Ill.*

An aqueous composition of matter consisting essentially of an aluminum

soap of a hydrocarbon carboxylic acid containing at least 10 carbon atoms, a volatile inert organic solvent selected from the group consisting of hydrocarbons and halogenated hydrocarbons having a boiling point in the range of 40°C. to 150°C., a basic volatile nitrogen compound selected from the group consisting of ammonia and organic amines and water, wherein the aluminum soap comprises 0.5% to 15% of the composition, the organic solvent comprises 10% to 50% of the composition and the amount of basic nitrogen compound is in the range of 4 moles to 50 moles per mole of aluminum soap, said aqueous emulsion being in a form which can be easily sprayed or applied to surfaces of porous material.

High Temperature Composition

U. S. Patent 2,952,903. *Edward Washken, Cambridge, Mass., and Leslie A. Runtton, Middle Haddam, and Henry C. Morton, Branford, Conn. (The Russell Manufacturing Co., Middletown, Conn.)*

A cermet composition having high thermal resistance consisting essentially of a blend composed of discrete particles of magnesium oxide, tungsten and nickel in compacted form, said particles being surface bonded only to form a rigid mass whereby their identity is maintained, said materials having about the following proportions:

| | Percent |
|----------------------|---------|
| Magnesium oxide..... | 22 |
| Tungsten..... | 70 |
| Nickel..... | 8 |

Pigmented-Dextran Modified Polyesters

U. S. Patent 2,954,351. *Leo J. Novak, Dayton, Ohio, assignor to The Commonwealth Engineering Co. of Ohio, Dayton, Ohio, a Corp. of Ohio.*

A method of making a pigmented dextran-modified resin which consists in heating a mixture of a polyhydric alcohol and a polycarboxylic acid or anhydride thereof to reaction temperature and producing a liquid resinous mass, and thereafter admixing thereto a powdered mass composed of pigment and water-insoluble dextran to produce a pigmented dextran-modified resin, the resin forming constituents being admixed and reacted together in the proportionate amounts in parts by weight consisting of diethylene glycol 530 parts, fumaric acid 638 parts and tetrahydroabietyl alcohol 146 parts, heating the mixture for about 4 hours at 180°C., and adding to the resultant reaction mixture 146 parts of tetrahydroabietyl alcohol, and heating the resultant resin-forming constituents to a temperature of about 200°C. for approximately one-and-one-half hours to distill off the water released during the reaction.

"Have you noticed how coatings containing Emersol® 9315 Liquid Fatty Acid have a fast air dry with almost no after-yellowing?"

"Natch—9315 has a real high I.V.—around 145 to 160."

"Well, if Emersol 9315 has such a high I.V., then it's . . ."

"Right! It's an ideal low-cost replacement or extender for linseed fatty acids or dehydrated castor acids."

"And I hear 9315 offers all the advantages of a fatty acid over whole oils . . . especially shorter cooking time."

"You said it! And ordering is simpler because Emery makes a complete line of fatty acids from saturated coconut type to polyunsaturated acids like tall oil and special liquid vegetable acids."

Emery INDUSTRIES, INC.
Fatty Acid Sales Department
Dept. X-11; Carew Tower, Cincinnati 2, Ohio

For complete specifications on Emersol 9315 and all of Emery's complete line of fatty acids, write for the Emeryfacts booklet titled, "Specifications and Characteristics of Fatty Acids."

YOU CAN STOP LOOKING!



CONTINENTAL HAS THE STEEL PAIL YOU NEED



**CONTINENTAL
CAN COMPANY**

Eastern Division: 100 East 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 790 Bay Street, Toronto 1
Cuban Office: Apartado 1709, Havana

Whatever your product, chances are Continental has the right steel container for you. And while steel containers may *look* alike, only Continental has the time-tested experience that leads to perfection in all aspects of metal packaging.

To you, this experience means consistently superior containers...exciting lithography...a dependable source of supply...research facilities second to none...famous Continental service.

For the pail you need, call Continental today.

TECHNICAL

Bulletins

HAND TRUCKS

New eight page, two color brochure describing four low-lift platform models of battery powered hand trucks has been published.

The trucks, with five inches of lift, are designed for fast horizontal movement of palletized materials. Models described have capacities of 4000, 6000, 8000 and 10,000 lbs.

Diagrams and drawings in the brochure indicate aisle requirements and turning radius for each model. Charts show wheelbase and grade clearance. Photographs illustrate features such as forward-reverse control handle, demountable drive wheel and oil-enclosed gear case. Complete specifications of all components are given.

Industrial Truck Div., Clark Equipment Co., Dept. PVP, Battle Creek, Mich.

FIRE-EXPLOSION SAFETY

Recommended practices and procedures in establishing emergency sections in chemical plants to take over responsibility to combat such destructive forces as fires and explosions are now available.

The pamphlet, outlining areas of responsibility of both company management and its emergency organization, emphasizes that it is important that the responsibility for developing and administering the emergency plan be delegated to a respected and responsible individual representing management.

In addition, the pamphlet outlines establishment of necessary activities in the fields of welfare, information, transportation, reciprocal agreements with neighboring industries, utilities and public organizations, adequate training programs, protection of records and adequate recording of the emergency for future analysis.

Copies of the emergency organization pamphlet are available from Mfg. Chemists' Assn., 1825 Connecticut Ave., N.W., Washington 9, D. C. at 20 cents each.

CHLORINE COMPOUNDS

New 44-page booklet that describes the use of organic chlorine compounds as solvents, extractants, fumigants, intermediates, and special-purpose fluids, has just been published.

The booklet contains comprehensive data on 13 organic chlorine compounds; ethylene dichloride, propylene dichloride, 1,1,2-trichloroethane, 1,2,3 - trichloropropane, dichloroethyl ether, dichloroisopropyl ether, triglycol dichloride, butyl chloride, 2-ethylhexyl chloride, isodecylchloride (mixed isomers), ethylene chlorhydrin, epichlorhydrin, and Chlorasol fumigant (mixture of ethylene dichloride and carbon tetrachloride). Included in the data are physical properties; cleaning formulations; toxicological properties; shipping, storage and handling information; test methods, and selected literature references.

Because of their high solvent power, chlorinated compounds are components of many textile formulations for scouring, spotting, and wetting-out; paint and varnish removers; dewaxing, degreasing, and degumming compounds; and specialty household cleaners. Used in fumigant formulations, chlorinated compounds are effective, penetrating, quick-acting, relatively non-flammable carriers.

All 13 organic chlorine compounds are useful intermediates in organic synthesis. Some are well suited for special-purpose fluids such as freezing-point depressants in fire extinguisher fluids and as aircraft-instrument fluids.

Union Carbide Chemicals Co., Dept. PVP, 30 E. 42nd St., New York 17, N. Y.

CONTROL INSTRUMENTS

Pressure gauges, thermometers and control instruments are described in Bulletin 3020.

Pressure gauges described in the comprehensive six-page bulletin are the bourdon-tube type covering a wide variety of industrial applications. Photographs illustrate each of the ten types covered, with information on dimensions, accuracies, construction features and suggested uses given in the text.

Included under temperature measurement are dial and glass tube

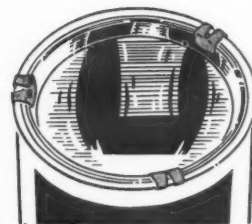


THE CALIFORNIA INK COMPANY, INC.
Raw Materials Department
545 Sansome Street • San Francisco, California

OR

Los Angeles.....The California Ink Company
2939 E. Pico Blvd.
Atlanta (Decatur), Georgia.....R. C. Fromant
Chicago.....J. W. Van Tuin Company
Cincinnati.....Deeks and Company
Cleveland.....The Dimlich-Radcliffe Company
High Point, N. C.....Bill Rupp
Minneapolis.....M. H. Baker Company
New York.....D. B. Becker Company
Portland, Seattle...The W. Ronald Benson Co.
Tampa (Indian Rocks), Florida...A. J. Passonno
Houston.....Cron Chemical Corporation

CAN TOP SECURING CLIPS



QUICK • SIMPLE
SAFE • REUSABLE

Easily snapped or tapped into place and easily removed with a nail. Will stand rough handling. Approved for mailing. Available in 3 sizes to fit standard cans.

For details contact

O. G. INNES CORP.

10 E. 40th STREET

NEW YORK 16, N. Y.

ORegon 9-6180

HOW TO MAKE YOUR OWN COLORANTS



MESS UP THE
WHOLE PLACE...
for just one
batch of color



Whether in big batches or small batches, it's mighty expensive and uneconomic to make your own color dispersions—at least that's been the experience of some of the largest paint manufacturers in the country.

So wouldn't it be better for you, too, to leave color making up to Cal Ink who are *specialists*?

Cal Ink makes color dispersions day after day—in big batches—under ideal color control conditions. That's why the colorants are consistently accurate—as well as economical. And you can buy them in Color-Pax® as small as 1/16 of an ounce, or 30-gallon drums (or polyethylene tubes or quart cans or plastic squeeze bottles). Fast service, too, from Cal Ink's strategic warehouses across the country.

How much time and money can you save with Cal Ink color dispersions?

All it takes is a letter or call or write to...

The California Ink Company, Inc., Raw Materials Department • 545 Sansome Street, San Francisco—or the nearest representative listed at left.

Ask your Cal Ink representative for a complete booklet of these "helpful hints."

thermometers, panel type and multi-angel thermometers. Photographs illustrate the different models with text covering information on construction, dimensions, ranges and typical applications.

Control instruments included are indicating controllers, valve positioner and pilot options, recorders, chemical attachments and accessories.

United States Gauge, Division of American Machine and Metals, Inc., Dept. PVP, Sellersville, Pa.

LATEXES

New brochure lists all the firm's sales latexes, their properties, and typical areas of use. Styrene-butadiene, polystyrene, vinyltolu-

ene-butadiene, saran, vinyl, and acrylic latex families are included. Paint, paper, textile, and building product use areas are emphasized.

Plastics Sales Dept., The Dow Chemical Co., Dept. PVP Midland, Mich.

SPEED REDUCERS

"Parallel Shaft Speed Reducers" is a new 36-page book (2719) that describes completely redesigned and expanded line of "balanced design" parallel shaft reducers in 57 sizes, including 23 new sizes. Single, double and triple reduction units are available in capacities up to 2,800 h.p. at high or low output speeds, and ratios up to 292:1.

Book 2719 describes the complete line and includes full information

for selecting the correct drive for every application. Sixteen pages of rating tables contain thermal and mechanical horsepower ratings for each input and output speed. Load classes are shown for almost 250 driven machines. Overhung loads, extended shafts and outboard bearings, dimensions and actual ratios are included in additional tables.

Link-Belt Co., Dept. PVP-PR, Prudential Plaza, Chicago 1, Ill.

METALLIC SOAP

New booklet entitled "The Effect of Metallic Soap on the Flow of Paint" by Francis J. Licata, technical manager of the firm's Metasap Division, has been made available. The booklet discusses the effect of various metallic soaps on several liquids used in paint formulation, such as, mineral spirits, bodied linseed oil, and an alkyd.

Metasap Division, Nopco Chemical Co., Dept. PVP, 60 Park Place, Newark, N. J.

RECEIVER GAUGES

New 8-page catalog #520 describes the line of dial indicating receiver gauges. Receiver gauges are special-purpose low pressure gauges used to indicate values transmitted by pneumatic signal from a remote location, usually in the range of 3-15 psi.

Catalog gives specifications for both the bourdon tube and diaphragm-actuated types. It also contains information on materials, dials, ranges, and case styles and sizes.

United States Gauge, Division of American Machine and Metals, Inc., Dept. PVP, Sellersville, Pa.

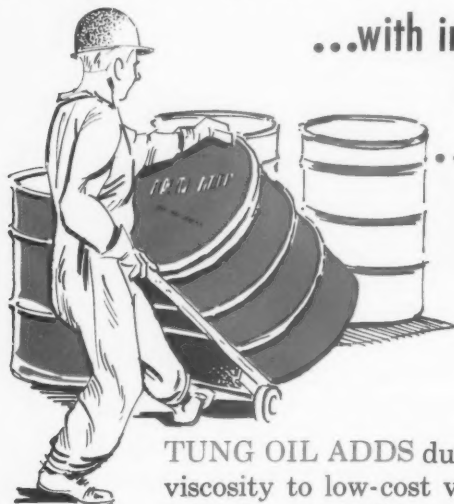
FLAMEPROOFING

Bibliography of published information on applications of antimony trioxide as a fire and flame retardant has just been issued.

The bibliography lists literature references to use of the compound as a flameproofing agent for paint, paper, wood, textiles, plastics, asphalt and rubber over the last twenty years. Domestic and foreign patents are covered, as well as books and periodicals. An introductory section summarizes methods of applying the compound to combustible materials.

Metal & Thermit Corp., Dept. PVP, Rahway, N. J.

HERE'S A LOW-COST DRUM ENAMEL



...with improved **DURABILITY**,
increased **VISCOSITY**
...using **HIGH QUALITY**
TUNG OIL

TUNG OIL ADDS durability and high viscosity to low-cost vehicles for drum enamels or similar coatings requiring lowest possible cost with durability. In colors ranging from white to black.

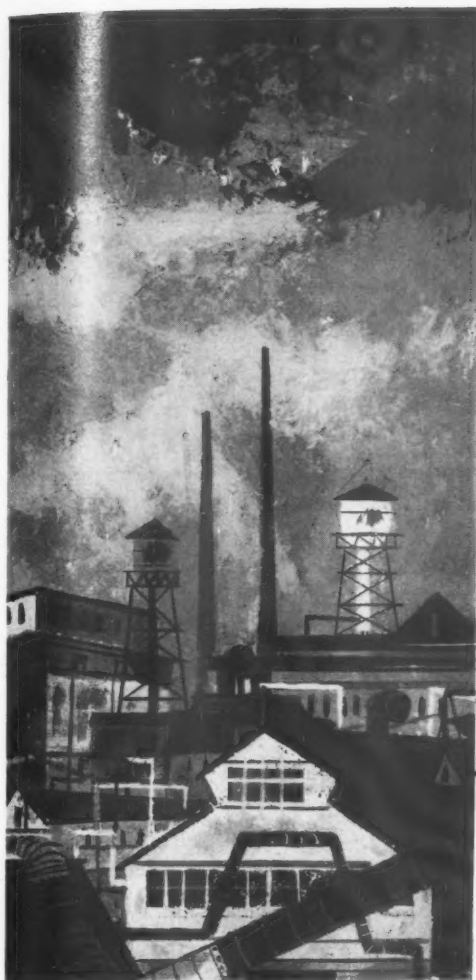
| SUGGESTED FORMULA: | POUNDS |
|--|---------------|
| TUNG OIL..... | 250 |
| Distilled Tall Oil (40-44% Rosin acids)..... | 750 |
| Magnesium or zinc oxide..... | 15 |
| Chemical grade lime..... | 75 |
| Total charge..... | 1090 |
| Yield..... | 994 |
| Mineral Spirits..... | 664 |
| Final Yield..... | 1658 |
| | (225 gallons) |

Write for complete manufacturing instructions.



THE AMERICAN TUNG OIL ASSOCIATION
205 CUMBERLAND STREET • POPLARVILLE, MISSISSIPPI

Product Improvement and New Product Development . . . Through Tung Oil Research



the best
paints
in the
business
get
from
here
to
here
in



Paint manufacturers who want to maintain quality control clear through to end use, ship their paints and coating vehicles in Vulcan Steel Containers. Vulcontainers protect quality, and save money, too. They're available for immediate shipment, in any

quantity. Sizes run from 1 through 55 gallons, and Vulcan has an exceptionally wide selection of styles, closures, colors and Hi Bake linings. Write today, to learn how you can give your paints a better send-off and save money, too!

Attach this ad to your calling card and mail today for ☐ free literature, or ☐ a meeting with your local 'Vulcansultant' a technical man who can help you with your container problems. • In California: Vulcan Containers Pacific Inc., San Leandro • In Canada: Vulcan Containers Limited, Toronto, Vancouver, B. C. **VULCAN CONTAINERS INC., Bellwood, Illinois, Phone: Linden 4-5000** PVP-110

New Developments

(From page 62)

haus, of Internationale Container Bau, Hamburg, West Germany, says that by varying the type of liner, "Flexi-Drum" containers can be used interchangeably for such diverse commodities as paint products, oils, chemicals, greases, dairy products, milling products, juices, beverages, cement, plaster, and fertilizers without extensive clean-or danger of contamination.

The cylindrical body of "Flexi-Drum" containers consists of molded, fibreglass-reinforced plastic top and bottom shells and flexible plastic-coated fabric sidewalls which collapse, accordion-like, into the top and bottom. The sidewall material is a newly-developed special composition called "Hi-Tex" fabric.

Designed for safe storage and transportation of all fluent commodities, the containers are filled through quick-opening orifices in the top and bottom.

Improved Grinding Rod Developed by Diamonite

Diamonite Products Mfg. Co., Shreve, Ohio, announces an improved formulation (#3663) of its high density alumina ceramic grinding rod. The cylindrical rod is used for grinding and diffusing ceramic and organic coatings and for other pebble mill applications.

It is claimed that the new material increases wear resistance of the rod up to 15 per cent. Its specific gravity is 3.5+ and its surface texture, after pretesting, is that of a polished satin finish.

All the firm's grinding rods are pretested for a minimum of 18 hours in mills charged with alumina ceramic materials. In this stage they take their final form and finish prior to packing for shipping.

Illustrated, starting from left, is an original Diamonite grinding rod cylindrical blank prior to pretesting. To the right is a rod after pretesting and final forming and surface finishing. The next two illustrations show rods after extended use—the last, after more than four years in service, still retains its original cylindrical shape.



Diamonite grinding rod cylindrical blank before pretesting.

NOW-- Seal Cans in a Jiffy

WITH POST OFFICE APPROVED

FREUND TRIPLE-GRIP CAN CLIPS



Anyone can easily and quickly apply Freund Triple-Grip Can Clips. No skill, no experience required.

Simple illustrated instructions show how. And, the cost is only pennies per can. For convincing proof, send for special Try-It Kit and test in your plant--100 clips for gallon cans, 100 for quart and smaller cans, special applicator tool, and low quantity prices --post paid \$7.50.

*Or--samples and price list
yours for the asking.*

FREUND can company

4445B Cottage Grove Ave. • ATLantic 5-7700 • Chicago 53, Ill.

rods are
of 18
alumina
is stage
and finish
g.
left, is
ing rod
testing.
etesting
e finish-
rations
se—the
ears in
original



Increase visibility and durability with Celite Pigment Extenders

For maximum night-time reflectivity in paints that can take the daily stress of heavy traffic, use Celite® diatomite extender pigments.

Celite's irregular particle shapes toughen paint films, providing both excellent resistance to wear and highly diffused light reflection. This gives traffic stripes high visibility day and night. Celite's acicular and perforated disc structures produce a unique interlacing film-reinforcing effect, for maxi-

mum resistance to abrasion and cracking. Paints will dry faster, too, because the open structure of Celite particles promotes rapid solvent release.

For full details on Celite pigment extenders, write Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario.

JOHNS-MANVILLE 



Self-spray paint troubles stop here

This is part of Sprayon's quality-control laboratory, where six full-time chemists and paint technicians make sure that your aerosol finishes—custom-loaded by Sprayon—never vary in color or performance. Before production begins, even on a routine re-order, prototype cans are made up in the laboratory and given an accelerated aging test equal to a year of shelf life. Test panels are then sprayed and the film is analyzed by precision instruments. Gloss and other characteristics are checked. Color is double-checked under a MacBeth light, the accepted standard of the paint industry. The spray pattern and the mechanical efficiency of the container are checked. All test data, materials and samples are dated, coded and filed for a year for later reference. Sprayon quality control is one reason why Sprayon has handled the greatest possible variety of contract-loading assignments for many of the nation's largest manufacturers—year after year after year. Get the full Sprayon story today.

SPRAYON PRODUCTS, INC. 2084 E. 65th St., Cleveland 3, Ohio



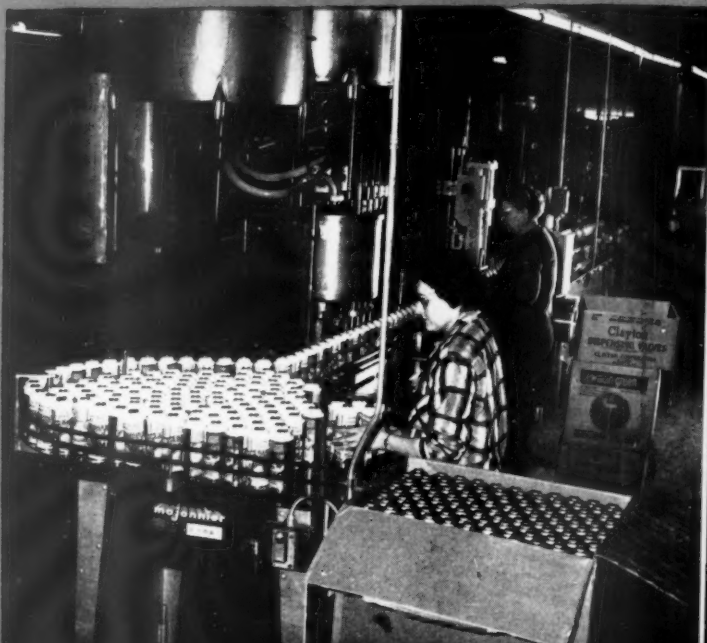
AEROSOL COATINGS

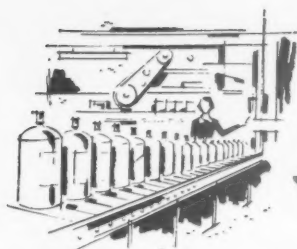
PACKAGING

FORMULATION

PRODUCTION

High speed, high capacity and versatility feature the new aerosol loading plant of Capitol Packaging Co. at Melrose Park, Ill. Equipment includes three new stainless steel pressure filling lines, one a high-speed rotary unit.





Here's proof-by-Comparison

why more and more aerosol manufacturers are using NEWMAN-GREEN AEROSOL VALVES

You get eleven major aerosol valve advantages—four are exclusives—when you buy Newman-Green valves. No other aerosol valve in the industry has *all* these features in a single valve. Creative Newman-Green, Inc. engineering produced this simplified valve design to help you in selling more aerosol products. Give us a call today and let our engineering services and aerosol valves help you in designing and manufacturing an even better aerosol product.

ADVANTAGES

| | | Newman-Green Inc. | Company A | Company B | Company C | Company D | Company E |
|----|---|----------------------|--------------------------------|--------------|--------------|--------------|--------------|
| 1 | Pressure fills fast because it does not fill through metering orifices. | ✓ | | ✓ | | | |
| 2 | All metering orifices in spray head easily accessible for cleaning. | ✓ | Exclusive Newman-Green Feature | | | | |
| 3 | 360° at spraying surface—twist top. | ✓ | ✓ | | ✓ | ✓ | ✓ |
| 4 | No small orifices drilled in metal parts. | ✓ | Exclusive Newman-Green Feature | | | | |
| 5 | Can be used on metal or glass containers. | ✓ | ✓ | | | ✓ | ✓ |
| 6 | Curved surface on spray button reduces finger fatigue. | ✓ | | ✓ | | ✓ | ✓ |
| 7 | Spray heads easy to apply after pressure filling. | ✓ | | | | | ✓ |
| 8 | Delivery tubes swedged on—not slipped over—valve body. | ✓ | Exclusive Newman-Green Feature | | | | |
| 9 | Excessive swelling of gasket not detrimental to operation of valve. | ✓ | | | | ✓ | ✓ |
| 10 | Spray pattern can be varied completely by changing only spray head. | ✓ | Exclusive Newman-Green Feature | | | | |
| 11 | No dissimilar metals used in valve parts. | ✓ | ✓ | | | | |

NEWMAN-GREEN

Creative Aerosol Valve Engineering
151 Interstate Road, Addison, Illinois

TESTING OF AEROSOL PRODUCTS

PART II

Moisture Determination and Analysis of Propellants

By
Dr. John J. Sciarra*

Moisture Determination

Moisture content of not only the basic aerosol concentrate but of the finished formulation must be considered for aerosol products since moisture may give rise to corrosion and incompatibilities between propellant and concentrate. The shelf-life of an aerosol container depends not only upon the stability of the product itself, but also upon the resistance of the container and its parts to pressure and corrosion caused by the propellant or the product. The resistance of the container to corrosion must be thoroughly considered before a product is released for marketing. Even in cases of an anhydrous formulation, the moisture content must be checked since water may be inadvertently introduced into the formulation from water vapor in the air or from ice resulting during the chilling operation used in the cold filling method.

The commonly used procedure for the determination of water in an aerosol product is the Karl Fischer Method whereby water is titrated with a complex solution of iodine and sulfur dioxide in a

mixture of pyridine and methanol (Karl Fischer Reagent). With all samples, the water is titrated with excess Karl Fischer reagent, and the excess of reagent is back titrated with standard water-in-methanol solution. Since atmospheric moisture causes erroneous results in these titrations, it is necessary to conduct such reactions in

an atmosphere which is as dry as possible. It is also necessary to protect reagent bottles as well as burettes, used in this reaction, from atmospheric moisture contamination.

With certain samples it is possible to titrate to a visual end point (brown to clear yellow color). However, in cases of deeply colored solutions, the end point is best determined electrometrically by means of a pH meter (calibrated to read volts or millivolts) or a potentiometer. Any instrument capable of detecting a change in potential can be used to determine the end point of this reaction.

In addition to the usual equipment needed for the determination of moisture by this method, several special pieces of equipment are required when this method is used to determine water in aerosol products. A can puncturing device is needed to allow for the controlled quantitative removal of product. Since the aerosol product is pressurized, a pressure flask, having four openings on top, and capable of withstanding a pressure of at least 40 pounds per square inch is also required.

The solvent used is generally methyl alcohol although ethylene glycol has been found to give satisfactory results with most aerosol products.

Since the Karl Fischer Reagent is not very stable it should be



Moisture determination using Karl Fisher method.

*Associate Professor of Pharmaceutical Chemistry, St. John's University, College of Pharmacy, Jamaica 32, New York.

$$\frac{\text{ml. water-in-methanol} \times \text{mg. H}_2\text{O/ml. water in methanol}}{\text{ml. Karl Fischer Reagent}} = \text{KF}$$

Equation I

$$\frac{\text{ml. Karl Fischer} \times \text{Karl Fischer Factor} \times 1000}{\text{grams of sample}} = \text{ppm water}$$

Equation II

standardized prior to use. It can be standardized by titrating a known volume of standard Water-in-Methanol solution (1 mg. water per ml. of methanol) with the Karl Fischer Reagent. The Karl Fischer Factor is determined from Equation I, where KF is expressed as mg./water ml. of Karl Fischer Reagent.

This factor is then used when determining water present in an aerosol sample.

Prior to determining the moisture content of the aerosol product, the pressure flask, connecting tubing, and can puncturing apparatus are dried in an oven at 100°C. Then the container is punctured with the can puncturing device and weighed accurately. The pressure flask is fitted with two electrodes (generally a platinum and tungsten pair) and the burette containing the Karl Fischer Reagent. The remaining openings are fitted with a gas dispersion tube and a drying tube. Ethylene glycol or methanol is added to the flask in sufficient quantity to cover the electrodes. Then enough Karl Fischer reagent is added to react with any water present in the ethylene glycol. Then the sample is allowed to bubble slowly through the glycol solution until a representative sample has escaped. This is then titrated with Karl Fischer reagent and the amount of reagent used is recorded. The sample container is then reweighed to obtain the weight of sample. The amount of water present in the sample is calculated from Equation II.

In certain instances it is advantageous to add a known excess of Karl Fischer reagent and then back titrate the excess reagent with standard water-in-methanol solution. From this one can calculate the amount of Karl Fischer reagent used by the sample. Then Equation II is used to calculate the water content.

This method has been found to give extremely accurate results as to the water content of aerosol

products. The presence of moisture is only one factor which must be considered when testing for corrosion resistance. Other factors which should also be considered since they will effect corrosion include: concentration of oxidizing agents, pH, temperature, agitation of product, composition of product, particle size of solids and conductivity of product.

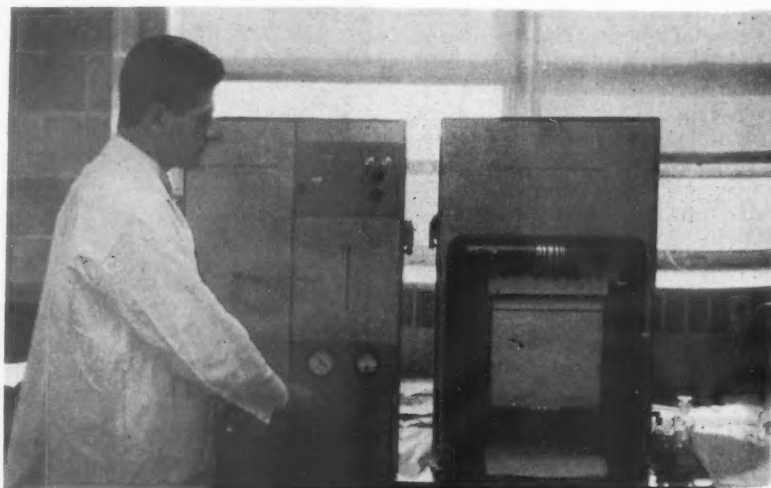
It is the results obtained from all of these tests that will ultimately determine if the product, container, valve, and other components of the aerosol package will remain stable throughout its expected shelf-life.

Analysis of Propellants

The nature of the propellant as well as the ratio of a mixture of propellants is important from a formulation as well as from a control standpoint. Determination of the vapor pressure of an aerosol product may or may not be indicative of the propellant or propellant mixture. Many factors will affect the final vapor pressure of the product (nature of propellant, solvents, etc.). Previous procedures were long and time consuming and did not yield in most cases, extremely accurate results. With the introduction of

gas chromatography this procedure became simplified and easy to perform. Routine analysis of propellant systems can be accomplished within 5-30 minutes depending upon the complexity of the system.

Basically gas chromatography consists of a two-phase system. One phase is fixed and is termed the static or stationary phase. This phase is generally a solid and is contained in a column. The other phase is mobile, and is termed the moving or mobile phase. In gas chromatography, this phase is a gas, and contains the sample. Phase equilibria occur between the sample components and the moving and stationary phase. The sample components are then distributed between the stationary and the moving phase. The phase equilibria is different for each component of the sample, resulting in a separation of the components by repeated distribution between the stationary and moving phases as they are moved down the length of a chromatographic column with proper chromatographic columns, it is possible to separate materials which may differ in boiling points by less than 1°C. Ingredients that are volatile or that will volatilize at the temperatures used, can be separated and identified by this procedure. The sample of aerosol product is carried with an inert gas (nitrogen, helium, etc.) through the chromatographic column which has been packed with the stationary phase. The material used for this purpose must be selected with care in order to insure accurate results.



Analyzing propellants by means of gas chromatography.

Usually kieselquhr impregnated with dimonyl phthalate is used for this purpose although Celite impregnated with di-n-octyl phthalate, alumina, firebrick impregnated with butyl phthalate, Celite impregnated with Carbowax 600, and many other substances have given good results. The column should separate the components in a reasonable length of time, 30 minutes or less. In addition the column must give symmetrical peaks and be stable at operating temperatures. Prior experimentation will usually determine the best material to use for the column.

This instrument must be calibrated by passing through the column known amounts of each component present in the sample. Figure 1 illustrates a typical gas chromatographic curve. For each peak that is produced, the area is calculated by measuring the height of the peak and multiplying it by width of the curve at the midpoint of the attitude. This calibration can be made convenient for calculations, by dividing this area by the volume of the component present in the sample to to give the specific area. This then is a constant for the component under the same set of conditions.

The sample mixture is then treated in a similar manner. The height of each peak is determined and the percent composition for each component can be calculated from Equation III.

$$\frac{\text{Area under peak from sample} \times 100}{\text{specific area for substance}} = \text{percent present}$$

Equation III

$$\frac{\text{Weight of component (from graph)} \times 100}{\text{Weight of sample}} = \text{percent present}$$

Equation IV

Another method of calibration involves determining the peaks obtained with varying quantities of each component present in the mixture and plotting these results on a chart (mg. of sample versus mm. height of peak). Then the sample is treated in a similar

manner and the heights of the peaks determined. The percent of each component can be calculated from Equation IV. Figure 2 illustrates a typical calibration curve.

This method can be applied to any aerosol formulation and will

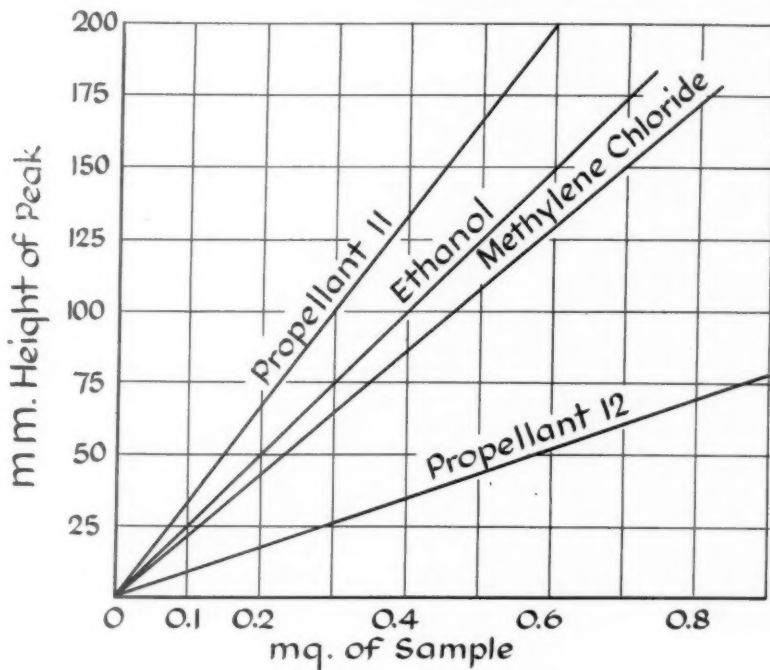


Figure 2. Typical calibration curve.

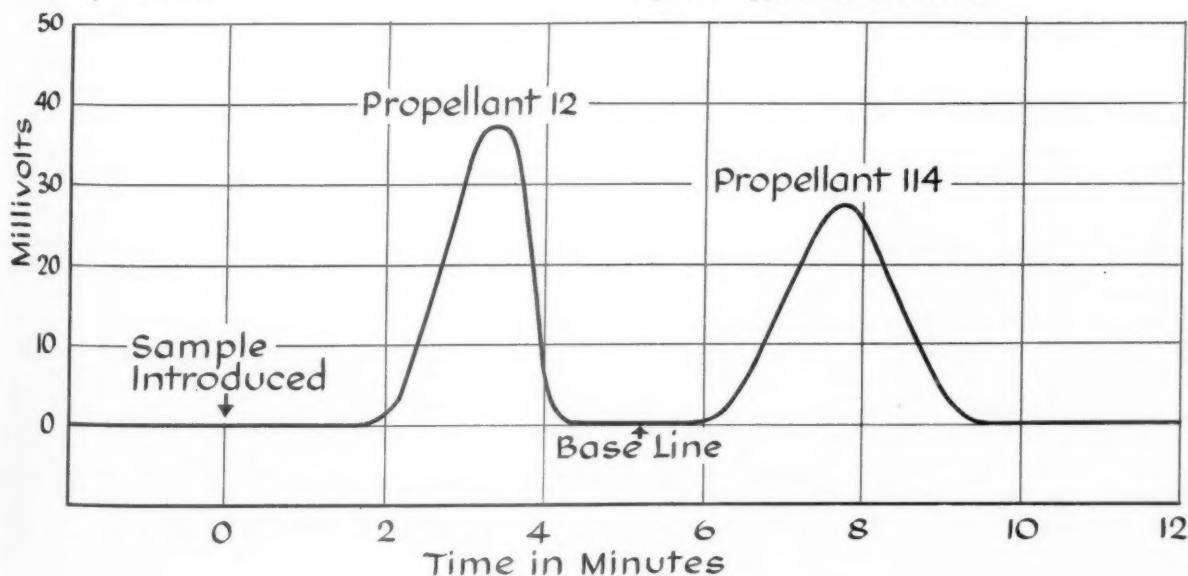


Figure 1. Typical gas chromatographic curve.

determine not only the proportion of each propellant present but any volatile components which may be present in the formulation. Gas chromatography is being constantly used to check the purity of propellant and propellant mixtures in order to insure the proper performance of aerosol products.

The testing procedures covered represent only a few of the tests that should be performed on aerosol products. While some of these tests may be costly and time consuming, the results will be rewarding in that only the better products will be released for sale as well as insuring the maintenance of quality control. This is a measure of a successful aerosol product.

References

"C.S.M.A. Aerosol Guide" Aerosol Division, Chemical Specialties Manufacturers Association, Inc., New York, 1957. pp. 11, 41, 49, 51, 53.

Herzka, A., and Pickthall, J., "Pressurized Packaging", Academic Press, Inc., New York, 1958. pp. 149-58.

Reed, F. T., and Downing, R. C., The Analysis of Moisture in Aerosol Formulations, *Proc. C.S.M.A.*, 38th Annual Meeting, December 1951. p. 41.

"Corrosion Testing Procedures", Genetron Product Information Bulletin, Allied Chemical Corp., General Chemical Division, New York. July 1960. pp 9-11.

Jenkins, J. W., and Amburgey, J. M., Determination of the Volatile Constituents of Aerosols by Gas Chromatography, *Proc. Scientific Section, The Toilet Goods Association*, No. 31, May 1959.

Percival, W. C., Quantitative Determination of Fluorinated Hydrocarbons by Gas Chromatography, *Analytical Chemistry*, 29:20-24, 1957.

Aerosol Catalog Available

A new multi-color eight-page aerosol spray paint catalog has just been published by Plasti-Kote, Inc., Cleveland. The new catalog is one of the most complete ever to be offered in the aerosol paint industry, according to the company.

Each page features full color illustrations of the company's push button spray products. Products for use in the home, for automobile and boat, on the farm and in industry are presented in complete detail. This includes information on operating features, color selections and assortment numbers. Special pages are devoted to fast drying lacquers, plastic sprays, hammer finish sprays and specialized sprays. Special spray products include Rust Solvent, Ignition Spray, Degreaser & Motor Cleaner, Insect Spray, Floral Sprays and many others. The company's point-of-sale floor and counter displays for aerosol paints are also illustrated in the catalog.

Aerosol Developments

CSMA Aerosol Division Lists Program for Fla. Meeting

Prominent business leaders will be featured speakers at the Aerosol Division's program at the annual meeting of the Chemical Specialties Manufacturers Association, Hollywood Beach, Fla. in December.

The Division's session will be divided into two parts. One will deal with broad general business subjects of interest to aerosol industry management men. The other, a special session on "Quality Control In The Filler's Plant," will provide a review of the latest techniques and developments in the area of aerosol products by some of the industry's quality control experts.

According to E. J. McKernan, Division chairman the following will speak at the Business Session:

Elliot Averett, vice-president, Bank of New York, who will talk on "Financing Growth Industries."

John A. Willis, assistant secretary and assistant treasurer, Union Carbide Corp., who will talk on "Good Business Accounting Practices."

A top management consultant will talk on "New Product Development."

In addition, a yet un-named speaker will talk on "Credit Procedures and Problems of the Aerosol Industry."

The quality control session will deal with such topics as: quality control requirements for valves, containers, propellant and propellant systems, concentrate and concentrate systems, production line operation, finished product certification and laboratory quality control.

In addition, other pertinent topics in this session will include: special quality controls required for such products as pharmaceutical and foods, application of statistical quality control to aerosol filling, and a review of what quality

control procedures a marketer expects of his filler.

According to Mr. McKernan, some of the speakers for this part of the program, which will be conducted as a seminar and panel discussion, have been selected and others will be determined in the near future.

George Barr, President of George Barr & Co., chairman-elect of the Aerosol Division, will be co-ordinator and moderator of the Quality Control Session.

Plasti-Kote Plans New Million Dollar Plant

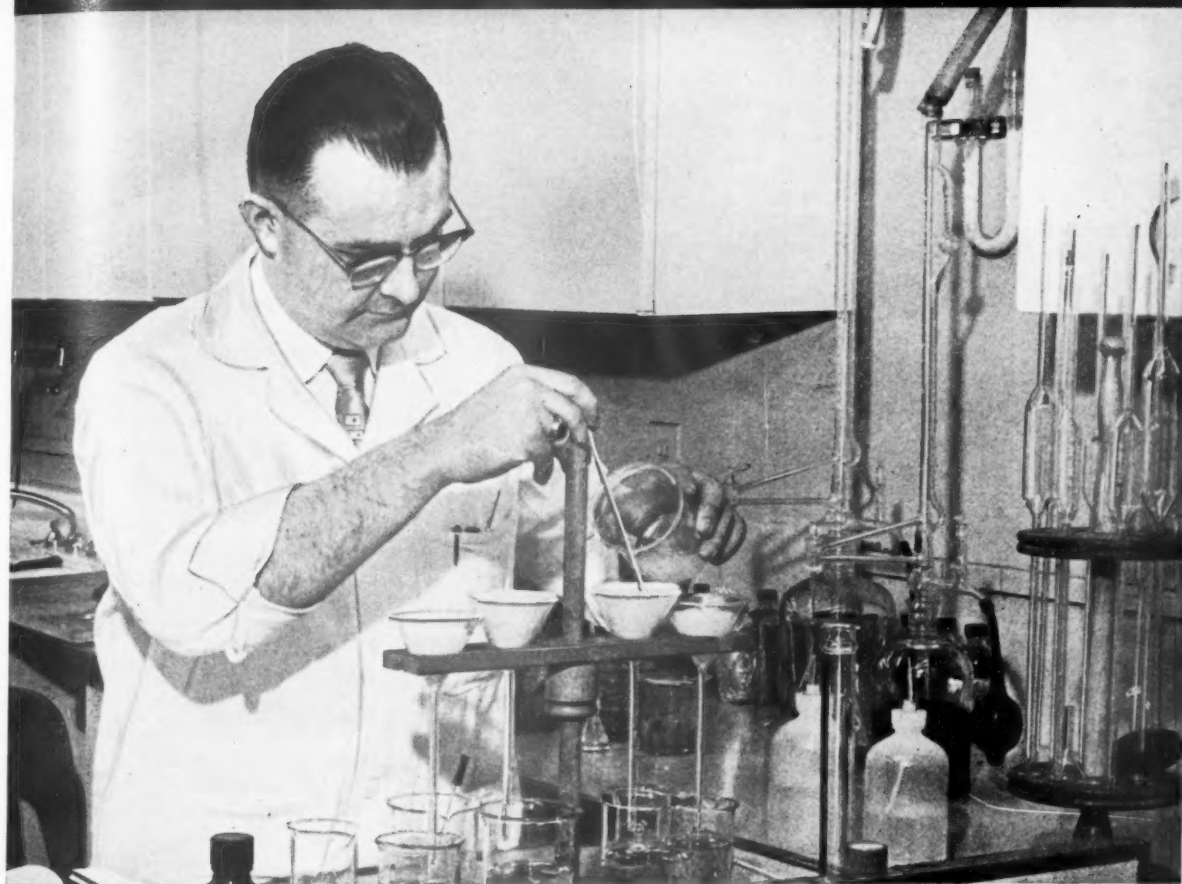
Immediate construction plans for a new million dollar, 100,000 square foot aerosol paint plant have been announced by Plasti-Kote, Inc., a Cleveland, Ohio aerosol paint manufacturer.

The new plant which will have a 20,000,000 can production capacity per year, will be located in the Cleveland area, and will be built on a ten-acre tract. It will be designed for expansion of an additional 100,000 square feet in the future. Features of the plant will include the latest efficient aerosol paint production lines, extensive warehouse and dock areas, and the ultimate in fireproofing, lighting, and safety equipment.

Expansion plans also call for construction early in 1961 of two other new 25,000 square foot plants in Los Angeles and Toronto, Canada. Each plant will cost approximately a quarter of a million dollars and will have a production capacity of 3,000,000 cans annually.

Paint is the fastest growing business-demand item in the aerosol field, according to the aerosol firm. Plasti-Kote will introduce a completely new aerosol spray paint package in 1961. The package will feature a new formulation discovery and an entirely new and exclusive spray head. The entire

The contract packager had the answer... another success story from the ISOTRON file.



He guards your good name in aerosols

Wonder whether a contract packager can meet your high standards of quality? You can relax if Aerosol Techniques, Inc., of Bridgeport, Conn., handles your job. This outstanding firm has the experience, people and equipment to accomplish the most exacting program of quality control for the most exacting marketer.

Such a program is tailored to your product when an ATI account executive accepts your order. Quality control procedures are set up to meet your precise specifications. All incoming packaging materials are rigorously examined; in-process testing further assures the quality of your product; and frequent

testing of retained samples is another quality check. In the filling of cosmetic, pharmaceutical, food, household, industrial and chemical aerosols, ATI's product development laboratories, research, technical and service staffs can serve you well.

An experienced packager like ATI can help reformulate your product to achieve the quality results you want. His recommendation of the proper can, valve and propellant is invaluable, too. More than ever, quality-conscious packagers specify Pennsalt ISOTRON®... the extra-pure, extra-dry propellants that are factory-sealed for your protection.

ISOTRON—The Key to Modern Living



Isotron Department
PENNSALT CHEMICALS CORPORATION
Three Penn Center
Philadelphia 2, Pa.

program will be backed by the largest advertising, promotion, and public relations campaign in the history of the aerosol paint industry. Alan M. Shapiro Advertising of Philadelphia will handle national advertising and Monroe B. Scharff and Co., New York, will handle the public relations and publicity program.

Can, Bottle Top Coder Developed by Adolph Gottscho

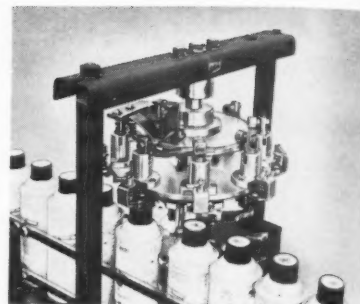
A redesign of its Model TMT "Markocoder" conveyor-line machine for imprinting codes, prices, etc. on the tops of cans, bottles, jars and other basically cylindrical products, has been announced by Adolph Gottscho, Inc.

The improved design now per-

mits straight-through travel of containers to assure smooth and uninterrupted product flow. Also, there is no need for cutting conveyors nor installing dead plates. Maximum speeds now obtainable, according to the manufacturer, is 1000 per minute.

The new Model TMT "Markocoder" is self-powered, driven by the product stream itself. Eight separate printing heads register imprints in the same spot on each succeeding product. A unique cam-activated mechanism automatically compensates for products of widely varying heights. It accommodates rubber type and instant-drying fluid inks suitable for any surface.

A new bulletin, #TMT-1, de-



ADOLPH GOTTSCHO

scribing the imprinting machine, is available from Adolph Gottscho, Inc., Hillside 5, N. J.

Capitol's New Loading Plant Features Speed, Versatility

High speed and heavy capacity have been built into the new aerosol loading plant of Capitol Packaging Co., Melrose Park, Ill. Equipment includes three new stainless steel pressure filling lines, one of which is a high-speed rotary. A new, improved propellant storage and blending system has also been installed.

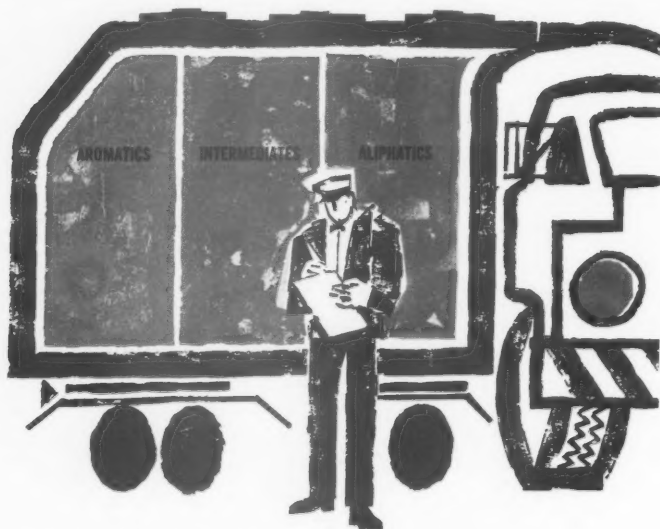
The firm can now load more than 25 million aerosol packages per year including protective coatings and other products.

The three lines can be operated simultaneously on three different jobs. At times, one line will handle orders as small as 150 cans of touch-up paints, company officials report, while another is turning out an order for 100,000 cans. There are separate facilities for handling solvent and water-based materials.

The firm's new plant and entire operation have been set up to accommodate the private label trade exclusively. By not marketing products under its own label, the company believes it frees itself of any conflict of interests. Complete laboratory and research facilities are maintained for the benefit of private label customers.

Pennsalt Appoints Dukert

Andrew A. Dukert has joined the recently-organized Research Products Development Department of Pennsalt Chemicals Corp., Philadelphia, as a plastics application engineer. He will concentrate on the commercial applications of such plastics as Pennsalt's new polyvinylidene fluoride resin "RC-2525."



HERE'S A SIMPLE WAY FOR SOLVENT BUYERS TO INCREASE PROFITS . . .

ESPOSOL SOLVENTS' ONE-SOURCE SUPPLY

Buy all your solvents at one place . . . at one time for greater savings!

- Save on Freight Costs—Smaller, multi-product orders are shipped in compartment lots by tank car, transport truck, barge and ship and enjoy bulk rates.
- Reduce Inventory Costs—Less capital tied up in inventory because stock on hand is kept to minimum. Losses from evaporation and other causes

greatly reduced. Fresh stock insured at all times.

- "Package" Delivery Ideal for Small Buyers—Combining small lots into one shipment reduces purchasing agent's work, simplifies unloading and handling, and insures all products arriving at one time to minimize production delays.
- Immediate Availability—Signal Oil's conveniently located terminals insure quick delivery to all points.



SIGNAL OIL AND GAS COMPANY HOUSTON DIVISION

Signal Oil and Gas Company, Houston Division

P. O. Box 5008

Houston 12, Texas

Please send additional information on Espesol's ONE SOURCE supply!

PVP-1160

Name _____

Title _____

Company _____

Address _____

City _____

Zone _____ State _____

Post Office Box 5008—Houston 12, Texas—Phone WA1ant 3-1651

New York Office: 18 Rockefeller Plaza, New York, Phone Circle 7-2520
Chicago Office: 1815 N. Harlem, Chicago, Illinois, Phone 41446 5-5410
Cleveland Office: 20800 Center Ridge Rd., Cleveland, Ohio, Phone Edison 3-0188
Louisville Office: 4th and Broadway St., Louisville, Ky., Phone Jumper 3-7634
Atlanta Office: 3121 Maple Drive, N.E., Phone Cedar 3-3227
Long Beach Office: 2828 Junipero Ave., Long Beach, Phone Nevada 6-3301

U. S. Terminals:

Houston, Texas • Chicago, Illinois • East Liverpool, Ohio
Madison, Indiana • Brownsville, Texas • Savannah, Georgia
Carleed, New Jersey • Los Angeles, California
Richmond, California

European Terminals:

Sordrecht (Rotterdam) Netherlands
Livorno (Leghorn), Italy



GUARANTEED LIMITS of *FIGHTING* *LAKE TROUT!*

On the fringe of the Arctic 700 miles deep in the Canadian wilderness, Lake Trout, Salmon Trout, Arctic Grayling, Big Northerns and Walleyes abound in unbelievable numbers in the crystal clear waters of the 187 x 40 mile island dotted Reindeer Lake.

KNOW IN ADVANCE THAT YOUR PACKAGE PRICE IN- CLUDES THE FOLLOWING:

★ 2200 mile round trip transportation; ★ Big 16 ft. aluminum boats; ★ Heavy duty motors.

★ Two guests only per boat;

★ The best in meals and accommodations; ★ Management with years of experience.

Arctic Lodges' twin motored DC3 or C46 charter planes will fly your customers and executives directly to the lodge airstrip. Only one stop for customs and gas.

Top sportsmen, writers and experienced fishermen acknowledge Reindeer Lake to be the finest fishing spot in Canada.

Our 5000 ft. compact airstrip is suitable for all types of corporation and privately owned planes.



PHONE OR WRITE FOR COMPLETE INFORMATION. OUR 16 MM SOUND AND COLOR FILM, 25 MINUTES IN LENGTH, IS AVAILABLE AT NO CHARGE FOR GROUP SHOWINGS.

ARCTIC *LODGES*

3416 University Avenue, S. E.
Minneapolis 14, Minnesota
Phone: FEderal 8-1583

FLATTING AGENTS

(From page 44)

and gives superior enamel hold-out and scrub resistance. Again, it is possible to reduce binder for lower

cost to give equal film properties to existing formulae.

TABLE 14
FILM PROPERTIES
ALKYD FLAT FORMULATION (SEE TABLE 12)
(CALCIUM SULFATE EXTENDED)

| | Control | HYDRITE MP As Flatting Agent |
|-------------------|---------|------------------------------------|
| Viscosity KU | 79 | 73 |
| Reflectance | 89.2 | 89.8 |
| Contrast Ratio | 0.963 | 0.963 |
| Yellowness | 0.0068 | 0.0053 |
| Gloss (60°) | 3 | 3 |
| Sheen (75°) | 7 | 10 |
| Enamel Hold-out % | 49.0 | 52.3 |

TABLE 15
FILM PROPERTIES
ALKYD FLAT FORMULATION (SEE TABLE 13)
(CALCINED CLAY EXTENDED)

| | Control | HYDRITE MP As Flatting Agent |
|-------------------|---------|------------------------------------|
| Viscosity KU | 89 | 80 |
| Reflectance | 89.4 | 89.4 |
| Contrast Ratio | 0.058 | 0.958 |
| Yellowness | 0.0055 | 0.0063 |
| Gloss (60°) | 3 | 3 |
| Sheen (75°) | 8 | 9 |
| Enamel Hold-out % | 41.5 | 52.0 |

References

- (1) Price, W. R. "Effect of Kaolinite Particle Size on Important Properties of Various Paint Systems". Paint and Varnish Production, 45, 7 and 8 (June-July, 1955).

"Ferrolite" Available

U. S. Steel Corp.'s new thinner tin plate called "Ferrolite," announced in the pilot stage last January, is now commercially available in weights of 45 through 60 pounds per base box. The product is said to combine the qualities of proportionally greater strength and lighter weight with lower material cost.

Plant Improvement for Polytung Oil

In response to recent increased interest in thermolized tung oil, Degen Oil & Chemical Co. announces improvements in thermolizing facilities at its Jersey City, N. J. plant which has doubled production capacity. The company markets thermolized tung oil under the brand name "Polytung oil."

Proved Performance!

What satisfied users report about the DAVIES 5-Gallon Flaring Pail—

"Completely Leakproof". Unlike conventional dope side double seam containers, the Davies flaring pail has only *one* seam and it's *welded*.

"Saves Storage Space". The tapered design permits storing at least 3 times as many pails in a car or your factory.

"Have Many Uses". Welded construction makes the pail ideal for roofing and caulking compounds and many other new applications.

Available plain or lithographed, this pail is only one of the quality containers produced at Davies' three plants in Cleveland, Conneaut and Massillon, Ohio.

Available with popular pouring spouts.



THE DAVIES CAN CO. 8007 Grand Avenue • Cleveland 4, Ohio



PIGMENT DISPERSION AIDS

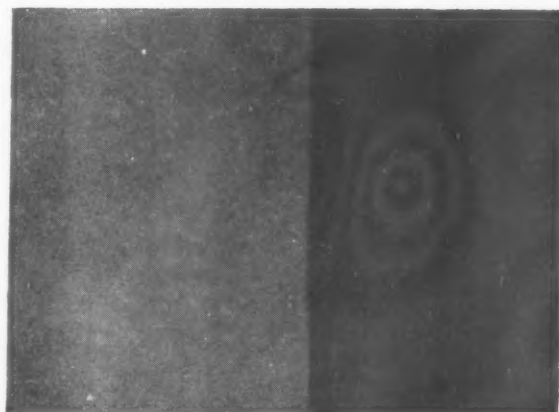
(From page 35)

piled show that less work is necessary to achieve a maximum fineness of grind, and more color value due to improved breakdown of pigment agglomerates. Furthermore, as a result of the better initial wetting of pigment particles improved color stability during storage is obtained, reducing the tendency of color drift. This is important not only for the expensive pigments where it may be possible to reduce the concentrations of the pigment to achieve a given shade, but also for low cost pigments such as the iron oxides.

Some other factors which make these products of interest to the paint formulators and coatings producers are its high boiling point. This is important in that it insures better leveling of the film. This, incidentally, was evidenced in the coatings which were made for this study. This, plus the better pigment dispersion, will enhance the gloss of the system. Obviously the smoother and more level the film the higher the gloss value.

(Continued on page 92)

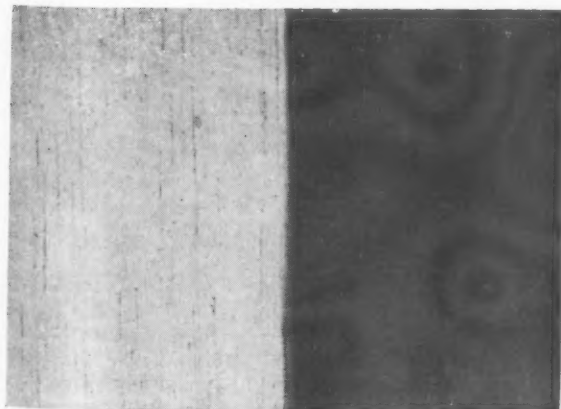
Figure 4. Methypyrrolidone-universal tint 20 parts Heliogen Green GA in 40 parts methy Pyr. Solvent System



Control

Let down in solvent alkyd
Water System

M. Pyr.



Control

Let down in water based paint

M. Pyr.

DIANOL

FIRST in the field!

FIRST with a
paint insecticide

FIRST with a non-toxic
anti-mildew compound

FIRST in continuing
research

You can add Dianol products to your paints with confidence in their ten years of proven effectiveness. You can be sure of satisfied customers. Dianol products mix with other ingredients before milling, during manufacture of paint with any type base. Quality and color of paint are not affected.

Your
Paint
with

DIANOL

DIANOL
Paint
Insecticide

... kills all household insects. Certified by a national testing corporation. The only insecticide proved by use in institutions for over ten years.

Your
Paint
with

DIANOL

DIANOL
Anti-Mildew
Compound

... gives lasting protection against mold, mildew and fungus. No harmful ingredients, no mercury compounds.

For full processing facts and other Dianol information, WRITE NOW for the new booklet prepared especially for paint manufacturers.

DIANOL

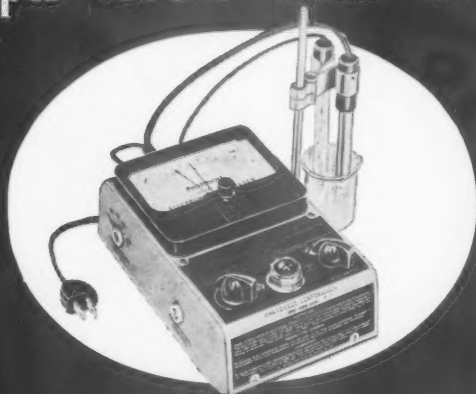
Department PV-11

P. O. Box 10968 St. Petersburg, Florida



65-14

PHOTOVOLT pH Meter MOD. 115



A full-fledged line-operated
pH Meter of remarkable ac-
curacy at the
moderate price of **\$175.-**

(complete incl. electrodes)

Write for bulletin #225 to

PHOTOVOLT CORP.

95 MADISON AVE.

NEW YORK 16, N. Y.

Universal Tint

The water and solvent solubility of methylpyrrolidone make it of interest as a possible carrier for universal paint systems.

Studies have been carried out to show the value of methylpyrrolidone as a carrier for universal tints. In one case, the pigment was merely mixed mechanically with methylpyrrolidone as previously described in the section under lacquers. In this case, 20 grams of phthalo green were mechanically stirred into 40 cc. of methylpyrrolidone for approximately 15 minutes. For control purposes the pigment was also mixed mechanically into water and also into xylol. These systems were then let down into an alkyd deep blending base, a flat white, polyvinyl acetate and a butadiene-styrene latex system. The methylpyrrolidone system was completely compatible with both the water and solvent based systems. Coatings were made and compared with the controls of water and xylol. There was at least a 50% increase in color value (Figure 4) indicating that the methylpyrrolidone not only served as an effective carrier for the pigment, but also as an effective dispersing agent in breaking down of agglomerates.

An additional study was carried out with an iron oxide pigment 20 parts, 4 parts of Phthalo Blue and 40 parts of methylpyrrolidone. This was ball milled for approximately 24 hours, and then let down into a flat white, an alkyd blending base, a polyvinyl acetate latex, a styrene-butadiene latex and an acrylic latex. All of these paints were obtained from retail outlets. For comparative purposes we had ground similar materials in water and in xylol. In all cases the color values of the systems with methylpyrrolidone were again well over 50% of that of the control system. It was also noted that the systems in the water and xylol settled out within 24 hours. On the other hand, the methylpyrrolidone system has been stored for approximately 2 months and no evidence of separation was noted. The coatings were checked for flocculation. The controls flocculated excessively, whereas there was only a very slight evidence of flocculation of the system containing methylpyrrolidone.

Bibliography

1. Patent Applied for by General Aniline & Film Corporation.
2. J. Werner, et al U. S. Patent 2,809,953.

COMING FEATURES

DECEMBER

Report of Chicago Paint Convention and Show.

•

Epoxy Resin pyromellitic dianhydride-glycol system.

JANUARY, 1961

1961 outlook for the Paint Industry and Paint Raw Materials, and Highlights of 1960 technical developments.

pyrroli-
for uni-

value of
al tints.
mechanic-
described
0 grams
to 40 cc.
minutes.
mixed
These
blend-
a buta-
olidone
both the
gs were
ter and
n color
olidone
gment,
reaking

an iron
ue and
milled
into a
acetate
e latex.
outlets.
similar
e color
were
ystem.
er and
hand,
ed for
epara-
ed for
sively,
nce of
pyrroli-



CALENDAR

November 6-9. Canadian Chemical Engineering Conference. Chemical Engineering Division of Chemical Institute of Canada. Quebec, Que.

November 7-9. 2nd Biennial Parade of Scientific Instruments and Symposium. Standard Scientific Supply Corp. Hotel New Yorker, New York, N. Y.

November 8-10. American Material Handling Society. Meeting in conjunction with Material Handling Institute's Central States Show. Kentucky Fair and Exposition Center, Louisville, Ky.

November 9-10. Chemical Market Research Assn. Pittsburgh Hilton Hotel, Pittsburgh, Pa.

November 14. Salesmen's Assn. of the American Chemical Industry. Annual Sales Clinic. Hotel Roosevelt, New York, N. Y.

November 18-20. Annual convention of Retail Paint & Wallpaper Distributors of America, Inc. Convention Hall, Atlantic City, N. J.

December 3-9. Chemical Specialties Manufacturers Assn., 47th Annual Meeting, Hollywood Beach Hotel, Hollywood, Fla.

December 4-7. American Institute of Chemical Engineers. Statler Hotel, Washington, D. C.

December 8. Synthetic Organic Chemical Manufacturers Assn. Annual Meeting. Hotel Roosevelt, New York, N. Y.

1961

January 25-27. 34th Annual Convention of Assn. of American Soap & Glycerine Producers, Waldorf-Astoria Hotel, New York City.

February 23. Protective Coatings Div. of the Chemical Institute of Canada, Divisional Conference, Toronto, Ontario.

February 24. Protective Coatings Div. of the Chemical Institute of Canada, Divisional Conference, Montreal, Quebec.

March 15-18. Annual Convention of the Southern Society for Paint Technology. Atlanta Biltmore Hotel, Atlanta, Ga.

May 5-6. Southwestern Paint Convention of the Dallas and Houston Societies for Paint Technology, Houston, Tex.

May 26-27. Fourteenth Annual Spring Symposium Of The Pacific Northwest Paint & Varnish Production Club. Hotel Georgia, Vancouver, B. C.

NEWS

NEWS OF COMPANIES, ASSOCIATIONS
TECHNICAL GROUPS
ITEMS OF GENERAL INTEREST



TOP executives of the Houston-headquartered Coast Paint and Lacquer Company and Reliance Varnish Co. complete plans for merger. Seated, l-r, are Carl Seefeld, who will be vice president in charge of sales for Coast Paint, and H. C. Grawemeyer, board chairman of Reliance. Standing are Ben Robertson Jr., left, president of Reliance, and Kenneth W. McDowell, president of Coast Paint.



An oil portrait—a tribute of chemical division personnel of The Goodyear Tire & Rubber Co.—was presented to Herman R. Thies, General Manager of the division, to commemorate completion of his 30th year of service with the company. He has headed the chemical division since it was formed in 1948, guiding it to a position of prominence in the chemical industry. Presentation was made by C. O. McNeer, division General Sales Manager, during a testimonial dinner honoring Mr. Thies.

NEWS

N. Y. Society Hears R. Miller On Latex Paints for Exteriors

Ben Chatzinoff, President of the New York Society for Paint Technology, presided over the September meeting at which R. Lynn Miller, Jr. of the Coating Technical Service Department of the Dow Chemical Co. presented his talk on "Latex Paint System for Exterior Wood Surfaces." Mr. Miller was introduced by Tony Skett, chairman of the Program Committee and sponsored by L. Davidson.

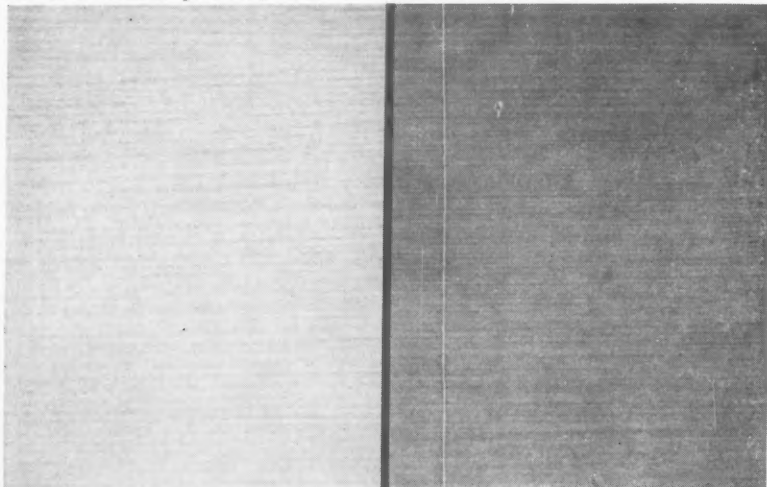
Mr. Miller demonstrated by slides that the acrylic latex film because of its optimum permeation of both liquid and vapor water was the best film to adhere to wood and not form blisters or peel. Since the film had a low water permeability in liquid form its stain transmission was also low. Mr. Miller reported that the best system developed by Dow was a two coat system, which held up on exterior wood for five years and required a single coat for repainting.

To overcome the poor adhesion of the prime coat to chalky surfaces, oil was added to the coating. During his talk and in the question and answer period that followed this stir-in oil was quite well discussed. They had used all the

drying oils all of which showed promise but employed boiled linseed oil most because of its availability to the painter. Varying the amount of the oil had shown a optimum amount of one pint per gallon of primer. Addition could be done at any time from the time of manufacturing of the primer to just before painting, the important thing was that the oil should not emulsify into the film, but be in suspension in the liquid so as to be free to migrate to form a firm bond to the surface below the chalk, by going thru the chalk.

Mr. Miller concluded by saying that the paint industry has the know how to successfully commercialize a complete latex system for exterior wood and the industry's continued emphasis on research will add to the knowledge of exterior paints, with particular emphasis on latex paint systems.

In low-luster paints, too:



Accelerated stain tests run in blister box. Magnification, IX.

ZINC OXIDE MAKES THE DIFFERENCE

If you're concerned about the fitness of low-luster paints for exterior use . . . keep these photos in mind. AZI's recommended formulation (left) and a commercial, zinc-free, low-luster paint (right) were simultaneously exposed to stain tests. The correct concentration of zinc oxide prevented discoloration in AZI's paint. The other paint was badly discolored by the soluble dyes in the substrate.

Tests like this further verify this fact:

An adequate ZnO content raises the level of performance of outside low-luster formulations . . . just as it improves the service and appearance of any good paint. It provides durability and film integrity . . . resists mildew, staining, and the destructive effects of ultraviolet light . . . imparts superior chalking characteristics. For further details, write American Zinc Institute.



AMERICAN ZINC INSTITUTE, INC.

292 Madison Avenue, New York 17, N. Y.

Monsanto Acquires New Jersey Property

Monsanto Chemical Co. announced that it has acquired approximately 650 acres of industrial land in Gloucester County, N. J.

The company disclosed plans to begin construction immediately of a multi-million dollar installation to produce phthalic anhydride and phthalate ester plasticizers. Completion of the units is scheduled for early in 1962.

The new Delaware River plant will be Monsanto's third and largest New Jersey plant and its 23rd U. S. manufacturing location. It now operates plants at South Kearny and at Camden.

Oronite Moves

Oronite Chemical Co. and the New York Market Research and Development group of Oronite's affiliated firm, California Chemical Co., are moving their New York offices from 30 Rockefeller Plaza to One Rockefeller Plaza, N. Y.

The offices are located in the General Dynamics Building, formerly known as the Time-Life Building.

The new and expanded offices, report company officials, provide additional space needed to handle present business volume and will also provide room for future expansion.

NEWS

Contest Reveals Small Town Dealers Tops in Merchandising

Today's small town paint dealers are not only as good but are frequently superior to their big city cousins in the ingenuity and inventiveness of their merchandising displays and practices. That is a reasonable conclusion based upon the final tabulations of the special contest for its dealers held last spring by the paint division of the Pittsburgh Plate Glass Co.

Prizes in this contest totaled \$23,800. Winners were chosen for the eye-catching appeal of window and store displays which they submitted with brief statements as to why they like to sell Pittsburgh's line of Wallhide wall paints and enamels.

Of the 229 winners selected from the thousands of entries, 141 were dealers in small towns in all parts of the country. Fourteen were from other small communities adjacent to large cities.

Only 37 dealers of the entire list of winners came from metropolitan cities, with an additional 34 from cities of medium size.

CSC Forms New Nitroparaffins Sales Dept.

Commercial Solvents Corp. announced the creation of a separate marketing department to handle the nitroparaffins, a unique CSC chemical development.

The new marketing unit consists of a selected group of experienced industrial chemicals salesmen and technical service specialists who will devote their full time to the exploitation of the nitroparaffins in industry.

Frank E. Maple has been appointed Sales Manager of the nitroparaffins department.

Union Carbide to Build New Technical Center

Union Carbide Olefins Co. announced that plans have been made to proceed with the design and construction of a new laboratory

at the Technical Center in South Charleston, W. Va.

The laboratory is designed to centralize the research, development, and special instrumentation departments of the firm which are currently in several locations at the company's manufacturing facilities in the Institute, W. Va. and South Charleston, W. Va. plants. Although the major portion of the new laboratory building will be occupied by the Olefins Co., it will also provide additional facilities for the research department of Union Carbide Chemicals Co.

The scope of the activity ranges from the chemistry of liquid and gaseous olefins through aromatic chemicals to coal hydrogenation.

Wechsler Feted

Ralph Wechsler, Chairman of the Board of Nopco Chemical Co., was honored recently at a testimonial dinner marking his retirement from the company after almost 40 years of service.

Over 200 employees attended the dinner at the Down Town Club, Newark, N. J., and presented him with a set of golf clubs.

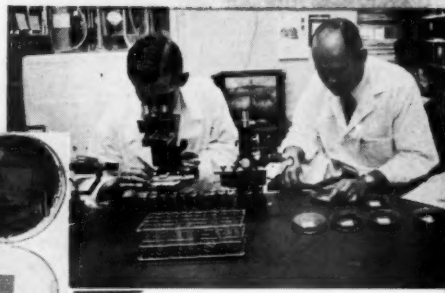
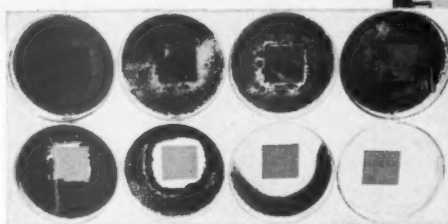
Cabot Consolidates

Godfrey L. Cabot, Inc., announced the consolidation of three subsidiaries: Cabot Carbon Co., Cabot Shops, Inc. and Cabot Gasoline Corp. and the parent company into a new corporate entity, Cabot Corp.

TROY

MILDEW

TROY microbiological research team rating mildew resistance performance.



TROYSAN PMA-30 for latex paints

Recent studies (see inset) prove TROYSAN PMA-30 adds superior mildew resistant qualities to all latex paints. Provides the quality standard preservative for latex paints and the only mildew inhibitor exclusively specified or preferred by major latex and other raw material producers.

TROYSAN PMO-30 for non-aqueous paint

Provides exceptional mildew resistance for oil base paints. A continuous microbiological research program, together with regular study of all mildew inhibitors, maintains TROYSAN PMO-30 as the standard mildew inhibitor for oil base paints.

TROY Chemical Company offers its large scale technical services, modern laboratory and experienced personnel to help you solve your most difficult microbiological problems. You are cordially invited to inspect our facilities and to meet with our research team. We invite your inquiries.

BE SURE you receive our TROY Technical Quarterly. Drop us a note on your letterhead and we will include you on the list.



TROY CHEMICAL COMPANY

338 Wilson Avenue / Newark 5, New Jersey

WATER
GROUND

MICA

ALSIBRONZ

EXTENDER PIGMENTS

for:

PRIMER-SEALERS

HOUSE PAINTS

LATEX-EMULSIONS

FRANKLIN MINERAL PRODUCTS

COMPANY

FRANKLIN, NORTH CAROLINA

INCORPORATED 1926

Agents in Principal Cities

CLASSIFIED ADVERTISEMENTS

Rates: \$.20 per word, except those seeking employment, for which rate is \$.10 per word. Minimum: ten words. Address all replies to Box Number, c/o Paint and Varnish Production, 855 Avenue of the Americas, New York 1, New York.

WANTED TO PURCHASE

Wish to purchase paint brush manufacturing equipment in good condition. Box 1060.

TECHNICAL SALES

Management position available with basic resin producer. Require minimum 10 years experience with paint manufacturer in formulation of industrial and architectural coatings. Additional asset—experience in raw materials, technical sales to coatings manufacturers.

Attractive salary, benefits, challenge, unusual opportunity with large national growth company. Location metropolitan N.Y. area. Send resume including salary requirements and detailed experience with various resins including acrylics, epoxies, isocyanates, etc. Box 1160.

NEWS

Titanine Consolidates

Titanine, Inc., one of the pioneer producers of fluorescent paints, has consolidated its manufacturing and research operations in a modern plant in Union, N. J. The company is a customer for alkyd resins from Plastics and Coal Chemicals Division of Allied Chemical Corp.

Titanine's fluorescent paints are used by the Air Force and U. S. Navy on fuselage, wing tips and tail assemblies of operational aircraft. Tests by the Air Force indicated that fluorescent colors helped reduce mid-air collisions among training planes by 75 per cent because pilots can distinguish approaching aircraft more readily.

The Coast Guard has also adopted the safety paint to many maritime uses. Because the paints fluoresce, or radiate light for long periods, their colors can penetrate the overcast for greater distances and can be seen at dusk and dawn or through haze and minor fogs when ordinary colors lose most of their visibility. Under normal light the paints warn of projecting bulkheads, low doorways, and reduce accidents on ship's ladders.

After military testing and evaluating of the safety paints the aircraft industry also recommended their use for civilian planes.

Plastics and Coal Chemicals' alkyd resins are used in the primer portion of Titanine's three-coat fluorescent safety paint system. Without the proper primer the safety paint is ineffective.

Standard Ultramarine Moves

Standard Ultramarine & Color Co., Huntington, West Va., a major producer of pigments for paint, printing ink, plastics, and allied industries announced it has moved its New Orleans office to Atlanta, Ga. The address for the new office in Atlanta is now: Professional Building, P.O. Box 10979, 868 York Ave., S. W., Atlanta, Ga.



Constituent Society Meetings

Baltimore, 2nd Friday, Marty's Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Dick Perfidio's Wishing Well.
Dayton — Nov., Feb., April, Hotel Gibbons.
Columbus — Jan., June, Sept., Everglades.

Cleveland, 3rd Friday, Cleveland Engineering & Scientific Center.

Dallas, 1st Thursday after 2nd Tuesday, Lucas B & B.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Monday before 3rd Wednesday, Sabella's Restaurant, San Francisco.

Houston, Monday prior to 2nd Tuesday, Rams Club.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Montebello Country Club.

Louisville, 3rd Wednesday, Sheraton Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, University Club, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, 3rd Thursday, Washington Athletic Club, Seattle, Wash.

Philadelphia, 2nd Thursday, Philadelphia Rifle Club.

Piedmont, 3rd Wednesday, Rainbow Supper Club, High Point, N. C.

Pittsburgh, 1st Monday, Gateway Plaza, Bldg. 2.

Rocky Mountain, 2nd Monday, Republican Club, Denver, Colo.

St. Louis, 3rd Tuesday, Rugger's.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Oak Room, Union Station.

Western New York, 1st Monday, 40-8 Club, Buffalo.

PERSONNEL CHANGES

GLIDDEN

Election of **Paul W. Neidhardt** as a Vice President and Director was announced.

Mr. Neidhardt, formerly General Sales Manager of the company's Paint Division, will serve as Vice President-Operations, Paint Division.



P. W.
Neidhardt



M. J.
Cummins

COLTON CHEMICAL

Michael J. Cummins has been appointed Sales Representative. His territory includes Eastern Ohio, Western Pennsylvania, Western New York and West Virginia with headquarters in Cleveland.

AMERICAN MINERAL SPIRITS

John E. Newman has been appointed Eastern Manager, Sales Development.



J. E.
Newman



J. F.
Lloyd

INLAND STEEL

James F. Loyd has been appointed Sales Manager, southern region. Mr. Loyd, formerly Sales Representative in southern Texas, headquartered at Houston, will now be located at the division's New Orleans, Louisiana, plant. He will be succeeded in southern Texas by **Joseph B. Bush**, formerly in charge of customer service at the New Orleans plant.

VULCAN ASSOCIATED

John H. Jones has been appointed Advertising Manager. Mr. Jones will maintain his headquarters at the company's Executive Offices in Birmingham, Ala.

SHERWIN-WILLIAMS

Dr. Samuel R. Benson has been named Superintendent of the company's Dry Color Department in Chicago. In his new post he succeeds **Merle B. Doty** who has retired after 37 years of service with the paint and chemical concern.

SCHENECTADY VARNISH

The appointment of **George E. Borthig** as Technical Representative for Insulating Varnishes has been announced.

Formerly affiliated for twelve years with the George C. Borthig Co. in various sales and electrical engineering positions, Mr. Borthig will service selected accounts in the Greater New York-Metropolitan territory, including adjacent Connecticut and New Jersey areas.

AMERICAN CAN

Appointment of **Fenton J. Dowling** as Western Area Manager of Sales was announced.

In his new post, Mr. Dowling will be located at the firm's western area headquarters in San Francisco. He will have charge of sales activities in Alaska, Oregon, Washington, Idaho, Montana, Wyoming, Colorado, Utah, New Mexico, Arizona, California, and Northern Mexico.

EMERY INDUSTRIES

Appointment of **Robert P. Dames** to the New York area office has been announced.

Mr. Dames will handle the company's complete line of fatty acids and hydrogenated glycerides in the territory including north New Jersey, central and northwestern Pennsylvania, central New York State, and western Maryland.

YOUR CHECK LIST Of Some WATERGROUND MICA ADVANTAGES

- ✓ 100% FLAKY extender pigment for a well-knit, durable, more flexible film. Flakes laminate.
- ✓ VALVE-LIKE ACTION. Flakes let moisture out, but not in, as they lie against a surface.
- ✓ LESS PENETRATION, RUNNING OR SAGGING.
- ✓ BETTER ADHESION AND BRIDGING.
- ✓ REINFORCES THE FILM as wire reinforces glass.
- ✓ ECONOMICAL. Small quantities, as low as 1/4 lb. per gal., produce superior paint films.
- ✓ STOPS CHECKING AND CRACKING.
- ✓ RETARDS FIRE. Tests prove Mica makes a very superior fire-retardant paint.
- ✓ IMPROVES MOISTURE RESISTANCE of all water-thinned exterior coatings.
- ✓ ENGLISH MICA is MORE UNIFORM because of a large source of supply from our own domestic mines.
- ✓ ENGLISH MICA is STOCKED IN 26 CITIES for quick delivery, wherever you are.

The English Mica Co.

RIDGEWAY CENTER BUILDING,
STAMFORD, CONN.

YOU GET BETTER HIDING

with these

SOUTHERN CLAYS

Al-Sil-Ate W

Al-Sil-Ate O

Distributors
In Principal Cities

Southern Clays, Inc.

33 Rector St., New York 6, N. Y. • Phone DIgby 4-4820

Write for samples and technical information.

INDEX OF ADVERTISERS IN THIS ISSUE

| | | | | | |
|---|--------|---------------------------------------|-----------|---------------------------------------|-----------|
| Paul O. Abbé, Inc. | Oct. | English Mica Co. | 97 | Corp. | Oct. |
| Acme Shellac Products Co. | Oct. | Enjay Chemical Co., A Div. of | | Naftone, Inc. | Oct. |
| Advance Solvents & Chemicals, Div. of | | Humble Oil & Refining Co. | 6 | National Lead Co. | Oct. |
| Carlisle Chemical Works, Inc. | Oct. | Farnow, Inc. | Oct. | National Starch & Chemical Corp. | Oct. |
| Air Reduction Chemical Co. | 26 | Ferro Corp., Porcelain Div. | 59 | New Jersey Zinc Co. | 13 |
| Alkydol Laboratories, Div. Reichhold | | Filpaco Industries, Inc. | Oct. | Newman-Green, Inc. | 82 |
| Chemicals, Inc. | Oct. | Franklin Mineral Products Co. | 96 | Newport Industries Co., Div. of Hey- | Front |
| Allied Chemical Corp., National An- | | Freund Can Co. | 78 | den Newport Chem. Corp. | Cover |
| iline Div. | 49 | General Dyestuff Co., Div. of General | | Nopco Chemical Co. | Oct. |
| Allied Chemical Corp., Plastics & Coal | | Aniline & Film Corp. | Oct. | Oronite Chemical Co. | 18 |
| Chemicals Div. | Oct. | General Tire & Rubber Co., Chemical | | Pacific Vegetable Oil Co. | 30 |
| C. M. Ambrose Co. | Oct. | Div. | 11 | Patterson Foundry & Machine Co. | Oct. |
| American Cyanamid Co., Plastics & | | Georgia Kaolin Co. | 4th | Pennsalt Chemicals Corp. | 37 |
| Resins Div. | 3rd | Georgia Marble Co. | Cover | Pennsylvania Industrial Chemical | |
| American Felt Co. | Oct. | The Glidden Co., Chemicals-Metals- | | Corp. | Oct. |
| American Tung Oil Assn. | 76 | Pigments Div. | Insert 19 | Phillips Petroleum Co. | 27 |
| American Zinc Institute | 94 | B. F. Goodrich Chemical Co. | Oct. | Photovolt Co. | 92 |
| American Zinc Sales Co. | 54 | Grace Chemical Co., Div. of W. R. | | Pittsburgh Chemical Co. | Oct. |
| Amoco Chemicals Corp. | 65, 69 | Grace & Co. | Oct. | R-B-H Dispersions Co., Div. of Inter- | |
| Archo-Daniels-Midland Co. | 10 | Harshaw Chemical Co. | 23, 46 | chemical Corp. | Oct. |
| Arctic Lodge | 89 | Hercules Powder Co. | Oct. | Radiant Color Co. | Insert 37 |
| Aromatic Products, Inc. | Oct. | Heyden Newport Chem. Corp. | Oct. | Reichhold Chemicals, Inc. | 4 |
| Atlas Electric Devices Co. | Oct. | Herman Hockmeyer & Co., Inc. | 67 | Rohm & Haas Co., Resinous Products | |
| Baker Castor Oil Co., Subs. of National | | J. M. Huber Corp. | 66 | Div. | 36 |
| Lead Co. | 12 | Imperial Color Chemical & Paper, | | Chas. Ross & Son Co., Inc. | Oct. |
| Brighton Corp. | 60 | Pigment Color Div., A Dept. of | | St. Joseph Lead Co. | Oct. |
| Brinkmann Instruments, Inc. | Oct. | Hercules Powder Co., Inc. | Oct. | Sandox, Inc. | Oct. |
| Buhler Bros. | 63 | Inland Steel Co. | Oct. | Shawinigan Resins Corp. | Oct. |
| California Ink Co. | 74, 75 | O. G. Innes Corp. | 74 | Shell Chemical Co. | 2nd |
| Carbon Dispersions, Inc. | Oct. | Instrument Development Laborato- | | Signal Oil & Gas Co., Houston Div. | Cover |
| Cargill, Inc. | 16 | ries, Inc. | Oct. | Sinclair Petrochemicals, Inc. | 88 |
| Celanese Corp. of Amer., Chemical | | International Talc Co. | 61 | Skelly Oil Co., Industrial Div. | Oct. |
| Div. | 21 | Johns-Manville Corp. | 79 | Skinner Engine Co., Troy Engine | 52 |
| Cellofilm Industries | 28 | Kent Machine Works, Inc. | Oct. | Div. | Oct. |
| Arthur Colton Co. | 92 | Kentucky Color & Chemical Co. | | Southern Clays, Inc. | 97 |
| Colton Chemical Co., Div. of Air Re- | | Subsidiary of Harshaw Chemical | | Spencer Kellogg & Sons, Inc. | 38 |
| duction Co., Inc. | Oct. | Co. | Oct. | Sprayon Products, Inc. | 80 |
| Columbian Carbon Co. (Mapico) | 45 | Karl Kiefer Machine Co. | Oct. | Stapan Chemical Co. | Oct. |
| Commercial Solvents Corp. | 9 | Kinetic Dispersion Corp. | Oct. | Synthetic Chemicals, Inc. | Oct. |
| Continental Can Co. | 73 | H. Kohnstamm & Co., Inc. | 62 | | |
| Coors Porcelain Co. | 56 | Lauderdale-Ruttger | 98 | | |
| Davies Can Co. | 90 | J. M. Lehmann Co., Inc. | 50 | | |
| Degen Oil & Chemical Co. | Oct. | Marbon Chemical Div., Borg-Warner | 29 | | |
| Diamond Alkali Co., Soda Products | | Corp. | 8 | | |
| Div. | Oct. | McDaniel Refractory Porcelain Co. | Oct. | | |
| Diamonite Products Mfg. Co. | Oct. | McWhorter Chemical Co. | 59 | | |
| Dianol Div., Mills-Pearson Corp. | 91 | Mearl Corp. | Oct. | | |
| Dicalite Dept., Great Lakes Carbon | | Metals Disintegrating Co. | Oct. | | |
| Corp. | Oct. | Metasap Division-Nopco Chemical | | | |
| Dow Badische | 14, 15 | Co. | Oct. | | |
| Dow Chemical Co. | 3 | Minerals & Chemicals Philipp Corp. | 17 | | |
| DuPont de Nemours & Co., Inc., E. I. | | Minnesota Linseed Oil Co., Subs. | | | |
| Explosives Dept. | Oct. | National Lead Co. | Oct. | | |
| The Eagle-Picher Co. | 24 | Monsanto Chemical Co., Inorganic | | | |
| Eastman Chemical Products, Inc. | 70, 71 | Chemicals Div. | 55 | | |
| Elgin Mfg. Co. | Oct. | Monsanto Chemical Co., Plastics Div. | 22 | | |
| Emery Industries, Inc. | 72 | Morse Chain Co., Div. of Borg-Warner | | | |
| | | | | Wyandotte Chemicals Corp. | 20 |

Florida Vacation

the New!

LAUDERDALE RUTTGER

RESORT-O-TEL
DIRECTLY ON THE OCEAN
FORT LAUDERDALE

with TWO leisure styles of vacation living!
★ COMPLETE HOTEL SERVICES
AND STAFF, or
★ THRIFTY "DO-IT-YOURSELF"
MOTEL UNITS

Double rooms, efficiencies, suites, many
with private balconies.

★ PRIVATE BEACH
★ HEATED, FRESH-WATER POOL
★ ELEVATOR ★ SHUFFLEBOARD
★ PUTTING GREEN

Poolside Pagoda Bar, Sai Wen Lounge,
Far East Dining Room.

Owner-Management assures
personal friendly service

For full color brochure, rates,
see your travel agent, or write

LAUDERDALE RUTTGER

RESORT-O-TEL

On the Famed Galt Ocean Mile, Fort Lauderdale, Florida
Affiliated with Ruttger Resorts in Florida and Minnesota

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS
AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 and June 11,
1960 (74 Stat. 208) showing the Ownership, Management, and Circulation of
PAINT AND VARNISH PRODUCTION, published monthly at Easton, Pa.,
for October 1, 1960.

1. The names and addresses of the publisher, editor, managing editor, and
business managers are:

Publisher: John Powell, 855 Avenue of the Americas, New York 1, N. Y.
Editor: Anthony Errico, 855 Avenue of the Americas, New York 1, N. Y.
Managing editor: None
Business manager: Alan P. Danforth, 855 Avenue of the Americas, New
York 1, N. Y.

2. The owner is (if owned by a corporation, its name and address must
be stated and also immediately thereunder the names and addresses of stock-
holders owning or holding 1 percent or more of total amount of stock. If not
owned by a corporation, the names and addresses of the individual owners
must be given. If owned by a partnership or other unincorporated firm, its
name and address, as well as that of each individual member, must be given.)
Powell Magazines, Inc., 855 Avenue of the Americas, New York 1, N. Y.

John Powell, 855 Avenue of the Americas, New York 1, N. Y.
Ira P. MacNair, 254 W. 31st Street, New York 1, N. Y.
Alice L. Lynch, 855 Avenue of the Americas, New York 1, N. Y.

3. The known bondholders, mortgagees, and other security holders owning
or holding 1 percent or more of total amount of bonds, mortgages, or other
securities are: (If there are none, so state.) None.

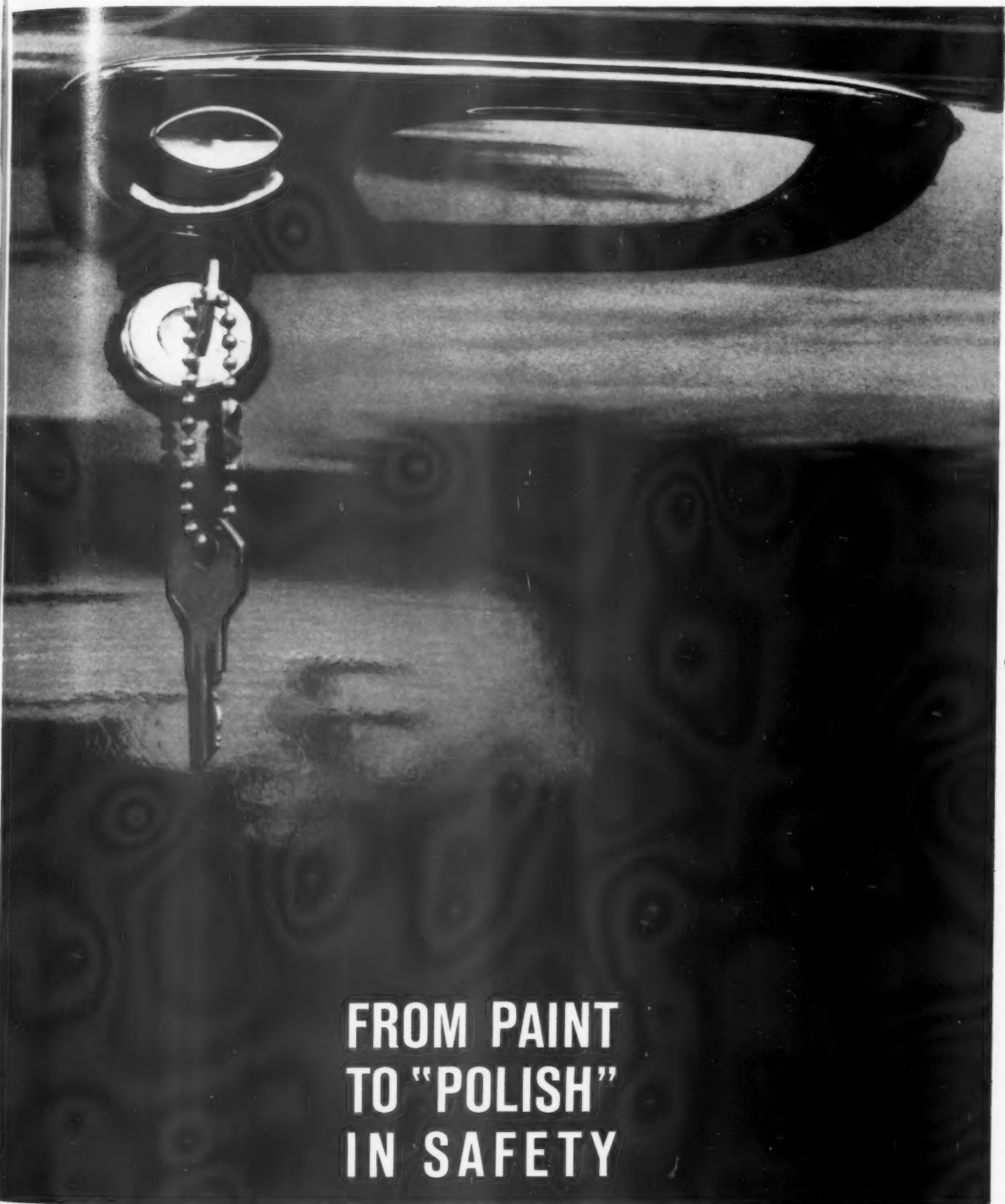
4. Paragraphs 2 and 3 include, in cases where the stockholder or security
holder appears upon the books of the company as trustee or in any other
fiduciary relation, the name of the person or corporation for whom such trustee
is acting; also the statements in the two paragraphs show the affiant's full
knowledge and belief as to the circumstances and conditions under which
stockholders and security holders who do not appear upon the books of the
company as trustees, hold stock and securities in a capacity other than that
of a bona fide owner.

5. The average number or copies of each issue of this publication sold or
distributed, through the mails or otherwise, to paid subscribers during the
12 months preceding the date shown above was: (This information is required
by the act of June 11, 1960 to be included in all statements regardless of fre-
quency of issue.) 4,306.

Alan P. Danforth, business mgr.

Sworn to and subscribed before me this 16th day of September, 1960
(SEAL)

Daniel D. Randall
Notary Public, State of New York
No. 41-8491000
Qualified in Queens County
(My commission expires March 30, 1962)



FROM PAINT TO "POLISH" IN SAFETY

Thanks to water-soluble MELAQUA* 600 melamine-acrylic resin. All the way from formulating to baking, Melaqua 600 gives you all the advantages of solvent-based enamels and more, yet eliminates any danger of fire. It gives smooth film and more durable high-gloss finish. In an infinite variety of brilliant or pastel colors, Melaqua-based coatings offer unusual resistance to discoloration, marring, weather, heat or abrasion. They can be used in almost every industrial baking application, and are excellent top coats and primers for automotive finishes. Write today for further information.

*Trademark

CYANAMID

AMERICAN CYANAMID COMPANY • PLASTICS AND RESINS DIVISION

SOUTH CHERRY STREET, WALLINGFORD, CONN. OFFICES IN: BOSTON • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DETROIT
LOS ANGELES • MINNEAPOLIS • OAKLAND • PHILADELPHIA • ST. LOUIS • SEATTLE • IN CANADA: CYANAMID OF CANADA LIMITED, MONTREAL • TORONTO



**WANT A
BETTER
FLATTING
AGENT?**

**WANT A
LOWER-COST
FLATTING
AGENT?**

**Try
Georgia Kaolin's
Hydrite MP**

With the introduction of Hydrite MP, the paint formulator has been given a new approach to the problem of controlling gloss and sheen.

The Hydrite MP is a low-cost, hydrated aluminum silicate with a unique controlled particle size that gives extremely high flattening efficiency. Hydrite MP has several advantages over other widely used flattening agents because of its lower oil demand, easier grinding characteristics and lower cost in the overall formulation.

Hydrite MP also gives improved uniformity of color and sheen over surfaces of varying porosity. Because of its lower oil absorption characteristics, Hydrite MP yields lower viscosity at equal PVC's and greater film integrity.

For further information and free samples, write:



Georgia Kaolin Company

433 North Broad Street • Elizabeth 3, New Jersey

FINE CLAYS FROM THE WORLD'S LARGEST KAOLIN PLANT

